TECHNOLOGY DEPT

September 18, 1940

NATIONAL PETROLEUM NEWS

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SEP 19 1940
DETROIT

THE GULF POLYFORM PROCESS

A new refining process, combining into one operation thermal cracking, with high conversion per pass, and polymerization of refinery gases, produces high yields of high-octane gasoline having excellent distillation, lead susceptibility, and blending characteristics ..... Page R-330

• • •

Better Mileage Is Now Preferred From Fuel, Engine Improvements

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• • •

Comb Lube Oil Distillates To Sift Out Undesirables

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Ickes invites group of oil men to secret conference. Page 13.

* * *

Fuel oil sale in Canada limited for next two years. Page 13.

* * *

Texas finds new outlets for natural gasoline. Page 24.

* * *

Wilson finds U. S. has adequate aviation gasoline crude. Page 14.

* * *

Roosevelt broadens ban on gasoline shipments. Page 13.

Root Petroleum Co. cuts Arkansas crude 10c per bbl. Page 13.

* * *

Twenty-three additional oils escape lube tax. Page 20.

* * *

Natural gas group names technical research committees. Page 21.

* * *

Draft law to exempt many in oil industry. Page 14.

* * *

Engineer says motorists will demand better mileage from gasolines. Page 16.

REFINING TECHNOLOGY EDITION

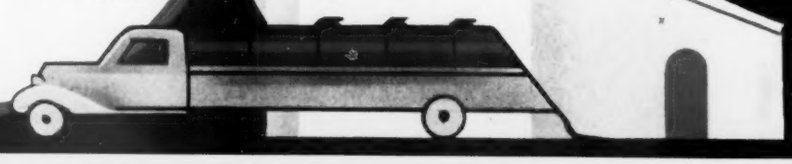
SPEEDY
FUEL OIL DELIVERY

Morrison fuel oil hose nozzles are noted for their speed of delivery and sure tight closing action.

Light, convenient, and easy to manipulate, these Morrison self closing nozzles are popular with fuel oil delivery men. The drivers like the smooth action and the clean cut tightness after the nozzles are closed.

A variety of these nozzles is made to meet every delivery problem.

Fuel oil deliveries are made simpler, safer, and faster with the Morrison fuel oil hose nozzles.



MORRISON BROS. COMPANY

OIL EQUIPMENT HEADQUARTERS

DUBUQUE, IOWA

COMING MEETINGS

SEPTEMBER

Va. Oil Men's Assn., Cavalier Hotel, Virginia Beach, Va., Fri., Sept. 20.
SAE National Tractor Meeting, Schroeder Hotel, Milwaukee, Wis., Tues.-Wed., Sept. 24, 25.
Oil Trade Assn. of Philadelphia, Inc., Annual Fall Golf Tournament, LuLu Temple Country Club, North Hills, Montgomery County, Penna., Wed., Sept. 25.
N. J. Oil Trade Assn., Annual Fall Golf Outing and Dinner, Suburban Golf Club, Union, N. J., Thurs., Sept. 26.

OCTOBER

National Lubricating Grease Institute, Annual Convention, Stevens Hotel, Chicago, Mon.-Tues., Sept. 30, Oct. 1.
Liquefied Petroleum Gas Assn., Omaha, Nebr., Mon.-Tues., Sept. 30-Oct. 1.
North American Gasoline Tax Conference, Whitley Hotel, Montgomery, Ala., Thurs.-Sat., Oct. 3-5.
Western Petroleum Refiners Assn., Regional Meeting, Wichita, Kansas, Fri., Oct. 4.
American Gas Assn., Atlantic City, New Jersey, Mon.-Thurs., Oct. 7-10.
National Safety Congress & Exposition, Hotel Stevens, Chicago, Ill., Mon.-Fri., Oct. 7-11.
Indiana Independent Petroleum Assn., Fall Convention, Hotel Severin, Indianapolis, Wed.-Thurs., Oct. 9-10.
Automobile Manufacturers Assn., 1940 Autoshow, New York, Sat., Oct. 12.
SAE Annual Dinner, Hotel Commodore, New York, Mon., Oct. 14.
National Stripper Well Assn., Dallas, Tex., Tues., Oct. 15.
Independent Petroleum Assn. of America, Annual Meeting, Dallas, Texas, Wed.-Fri., Oct. 16-18.
New England Tax Conference, Mountain View Hotel, Whitefield, N. H., Wed.-Fri., Oct. 16-18.
American Institute of Mining and Metallurgical Engineers, Petroleum Division, Los Angeles, Oct. 17-18.
National Dixie Distributors, Inc., Hot Springs, Ark., Monday, Oct. 21.
American Institute of Mining and Metallurgical Engineers, Petroleum Division, Tulsa, Okla., Thurs.-Sat., Oct. 24-26.
Western Petroleum Refiners Assn., Regional Meeting, Shreveport, La., Fri., Oct. 25.
Oil Trades Assn. of New York, Annual Banquet, Waldorf-Astoria Hotel, New York, N. Y., Tues., Oct. 29.

NOVEMBER

California Natural Gasoline Assn., Los Angeles, Calif., Fri., Nov. 1.
Tennessee Oil Men's Assn., Fall Convention, Chattanooga, Tenn., Wed.-Fri., Oct. 30-Nov. 1.
Texas Mid-Continent Oil & Gas Assn., Fort Worth, Tex., Thurs.-Sat., Oct. 31-Nov. 2.
SAE, National Aircraft Production Meeting, Biltmore Hotel, Los Angeles, Calif., Thurs.-Sat., Oct. 31-Nov. 2.
American Assn. of Petroleum Geologists, Los Angeles, Calif., Thurs.-Fri., Nov. 7-8.
SAE, National Fuels and Lubricants Meeting, Thurs.-Fri., Nov. 7-8.
American Petroleum Institute, 21st Annual Meeting, Stevens Hotel, Chicago, Ill., Mon.-Fri., Nov. 11-15.
Arkansas Oil Dealers Assn., Little Rock, Ark., Thurs., Nov. 14.
Arkansas Society for Testing Materials, Hotel Mayflower, Washington, D. C., Thurs., Nov. 14.
Missouri Independent Oil Jobbers Assn., Fourth Annual convention, Hotel DeSoto, St. Louis, Mo., Wed.-Thurs., Nov. 27-28.

DECEMBER

American Institute of Chemical Engineers, New Orleans, La., Mon.-Fri., Dec. 2-6.
National Asphalt Conference, Dallas, Texas, Mon.-Sat., Dec. 9-14.

JANUARY, 1941

SAE Annual Meeting, (and Engineering Display) Book-Cadillac Hotel, Detroit, Mich., Jan. 6-10.

FEBRUARY, 1941

Iowa Independent Oil Jobbers Assn., Des Moines, Ia., Feb. 26-28.

MARCH, 1941

American Society for Testing Materials, Hotel Mayflower, Washington, D. C., March 3-7.
Indiana Independent Petroleum Assn., 1941 Spring Convention & Refiners' & Suppliers' Exhibit, Hotel Severin, Indianapolis, Ind., March 11-13.

APRIL, 1941

American Assn. of Petroleum Geologists, 26th Annual Meeting, Rice Hotel, Houston, Tex., April 2, 3 and 4.
National Petroleum Assn., semi-annual meeting, Hotel Cleveland, Cleveland, Ohio, April 24-25.

JUNE, 1941

American Society for Testing Materials, 44th Annual Meeting, Palmer House, Chicago, Ill., June 23-27.

NATIONAL PETROLEUM NEWS

SEPTEMBER 18, 1940

NEWS

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NEWS BUREAUS

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Tulsa, Okla., 904 World Bldg., Telephone, 3-7132.
Los Angeles, 610-A Hillstreet Bldg., 815 South Hill Street, Telephone, VAndike 2845.
Chicago, Buckingham Bldg., 59 E. Van Buren Street, Telephone, Harrison 5901-2-3.

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THIS WEEK WITH NPN

LOADING RACK

By installing a new, highly-systematized loading rack, an oil marketer can now handle 100,000 gals. of fuel oil or more per day at his bulk plant. A voice amplifier directs drivers where to spot trucks and what to take out—automatic recording and printing meters reduce truck loading time—and trucks, 16 at a time, can load at a rate of 500 to 600 gals. per minute at the rack. This has resulted in the elimination of a yard man, speedier loading and other worthwhile savings in costs. Page 25.

TRUCK TRANSPORTATION

This issue carries an article showing the trends of truck transportation in the Middle South and the effect of increased truck load limits. Of interest to every marketer is the description of a "piecework" method of compensating drivers, payment being made on a basis of mileage (for transports) and gallonage (for city trucks). Another feature describes the fact book system, a simple cost accounting method for checking on truck operations, used by one marketer. Page 32.

THURMAN ARNOLD

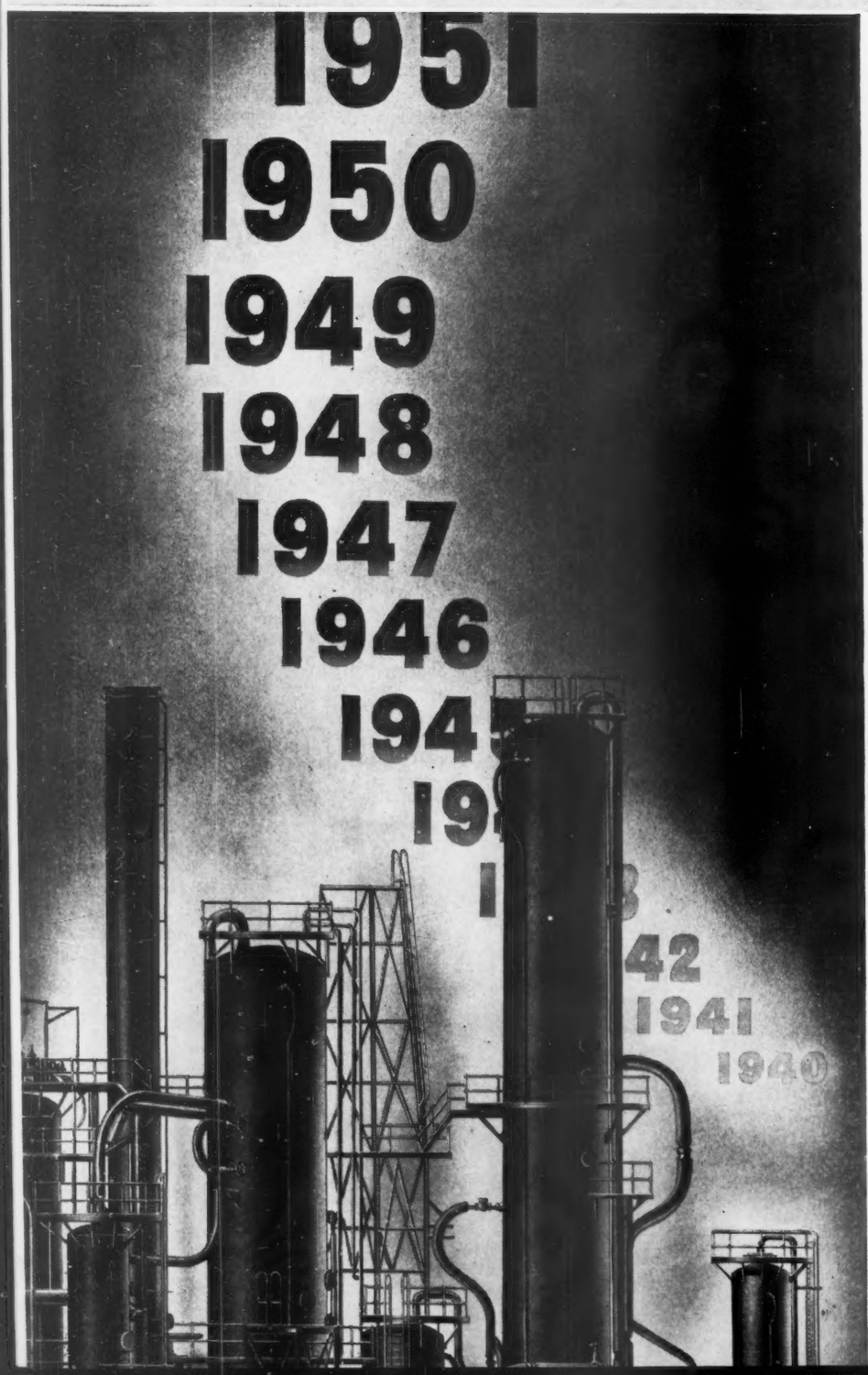
Last week NPN carried a two-page expose of the lowest-possible-prices - for - consumers objective of the New Deal's anti-trust program, as evidenced by Thurman Arnold's book, "Bottlenecks of Business." That this policy is "riling" the small business man was evidenced by a telephone call received by NPN early Thursday morning last week. An official of a gasoline dealer association had just received his copy of NPN and, reading the article, picked up the 'phone and asked us for prices on reprints in lots of a thousand for distribution to dealers.

NEXT WEEK

Next week's NPN features an article describing the bulk plant of a large company which designed a bulk plant to afford the highest operating efficiency. The article tells what has been done to get a maximum flow of a large number of products.

ADVERTISING PAGES REMOVED

"LEAD RESPONSE" – a vital consideration in long-range planning for high anti-knock fuels



THE REFINER who is planning for his fuels of the future is faced with decisions which will influence his products—and profits—for many years to come. In the selection of refining processes he must carefully balance different factors, such as types of available crude oils, desired octane number of the finished gasoline, licensing and equipment costs for new refining processes, yields, operating and maintenance costs of processes, and the "lead response" or "lead susceptibility" of the product.

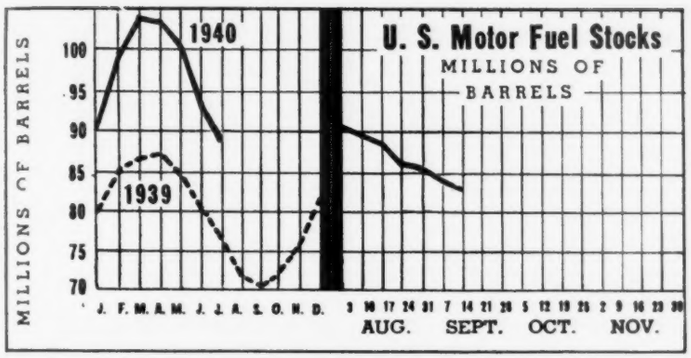
The octane number and the lead response of the finished gasoline are two of these factors which are particularly important from a long-range viewpoint.

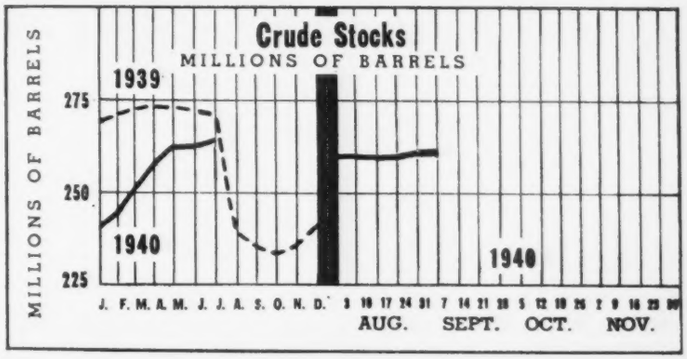
Many modern refining processes produce gasoline which, by today's standards, is of high octane number. But fuel standards are not fixed. The continuous development of engines of greater efficiency will call for corresponding increases in anti-knock value, and octane numbers which seem high today will be exceeded in the future. For this reason, refiners who look well ahead in the selection of refining processes are investigating carefully the *"lead response"* of the fuels produced by each before selecting new equipment.

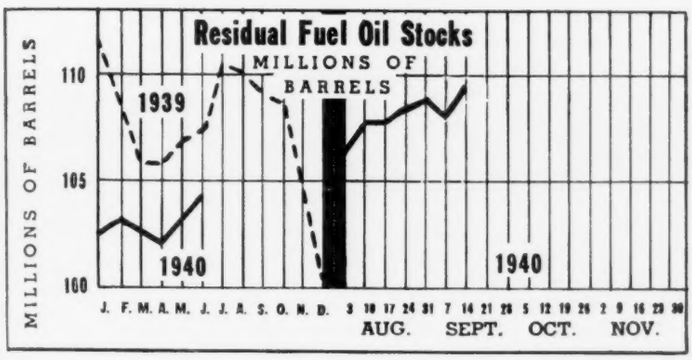
A process which produces fuel of good lead response permits the refiner to keep pace with the continuous trend toward higher octane numbers through the addition of lead tetraethyl. On the other hand, refining equipment which produces fuel with poor lead response, even though such fuel may have an inherently high anti-knock value, might become obsolete. Thus the refiner who operates on a long-range basis should give prime consideration to those processes which yield fuels having *both* high anti-knock value *and* high lead response.

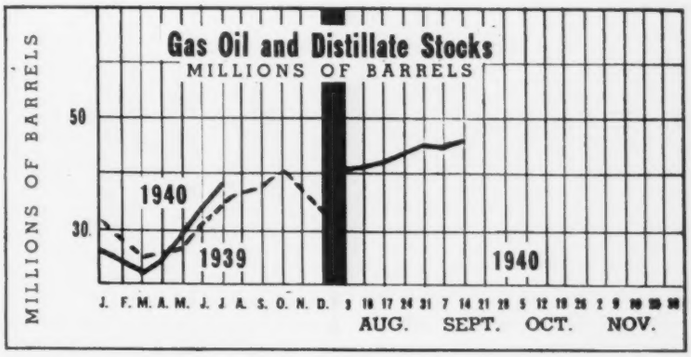
ETHYL GASOLINE CORPORATION
Chrysler Building, New York, N. Y.

LATEST OIL INDUSTRY
· STATISTICS ·









A. P. I. Weekly Refinery Report

(Figures in Thousands of Barrels of 42 Gallons Each)

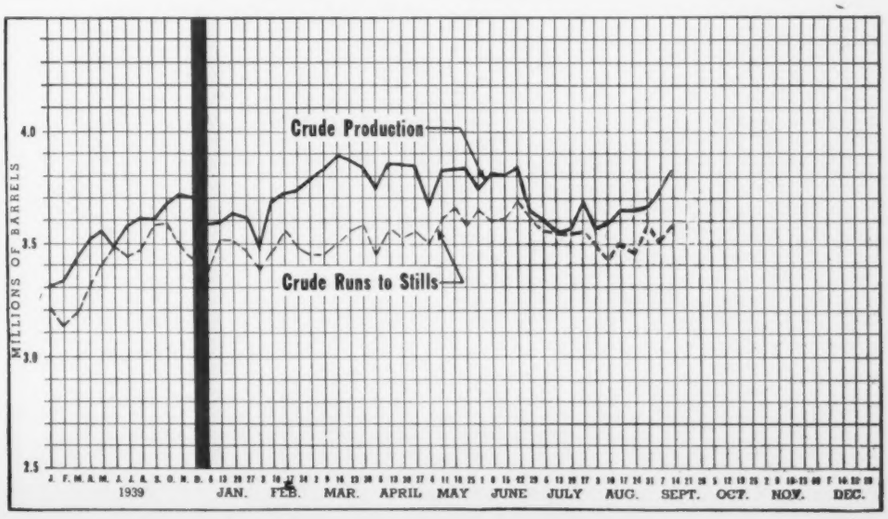
Districts	Daily Average Crude to Stills Week Ended		Per Cent of Reporting Capacity Operated Week Ended		(a) Gasoline Production Week Ended		Stocks Total Finished & Unfinished Motor Fuel (b) Week Ended		Stocks of Gas Oil & Distillates At Refineries Week Ended		At Terms. Trans. Pipelines Week Ended		Stocks of Residual Fuel Oil At Refineries Week Ended		At Terms. Trans. Pipelines Week Ended	
	Sept. 14	Sept. 7	Sept. 14	Sept. 7	Sept. 14	Sept. 7	Sept. 14	Sept. 7	Sept. 14	Sept. 7	Sept. 14	Sept. 7	Sept. 14	Sept. 7	Sept. 14	Sept. 7
East Coast	605	583	94.1	90.7	1,626	1,530	21,616	21,930	8,858	8,683	8,694	8,549	6,588	6,344	6,049	5,643
Appalachian	114	110	80.3	77.5	424	419	3,276	3,215	315	321	195	205	566	546	....	....
Ind., Ill., Ky.	538	563	80.3	84.0	2,107	2,214	13,803	14,260	3,680	3,622	2,033	1,917	3,117	3,203	313	302
Okla., Kans., Mo.	277	263	85.8	81.4	(c)1,042	(c) 989	6,174	6,292	1,581	1,554	101	100	2,182	2,184	....	....
Inland Texas	123	104	73.7	62.3	458	448	1,568	1,555	391	387	....	....	1,533	1,521	....	....
Texas Gulf	818	790	89.5	86.4	2,432	2,397	10,521	10,495	6,387	6,047	983	983	7,339	7,336	286	192
La., Gulf	116	107	72.5	66.9	320	285	2,597	2,533	1,153	1,058	25	29	1,403	1,371	280	242
No. La., Ark.	46	42	88.5	80.8	132	125	488	535	314	290	9	11	523	508	....	....
Rocky Mt.	55	45	80.9	66.2	255	227	891	883	118	118	....	....	512	449	....	....
California	523	526	71.6	72.1	1,521	1,451	15,376	15,601	8,139	8,096	2,037	1,890	54,259	54,263	22,045	21,831
Total Reporting	3,215	3,133	83.1	81.0	10,317	10,085	76,310	77,299	30,936	30,176	14,077	13,684	78,022	77,725	28,973	28,210
U. S. Total (d)	3,580	3,500			11,724	11,460	83,300	84,294	31,891	31,136	14,757	14,309	80,002	79,710	29,133	28,370
U. S. Total 9-14-39 (d)	3,517				11,846		71,708		27,691		10,174		86,933		27,997	

(a) Includes straight-run, cracked and natural blended.
(b) Includes stocks at refineries, in bulk-terminals, pipe lines and in transit.
(c) 12% of reporting capacity in this district did not report gasoline production.
(d) Estimated, U. S. Bureau of Mines basis

Crude Oil Production for the U. S.

(American Petroleum Institute figures)

	Week Ended Sept. 14 Barrels	Week Ended Sept. 7 Barrels
Oklahoma	409,800	421,700
Kansas	194,600	165,750
Nebraska	200	200
Texas	1,308,150	1,299,200
Louisiana	285,450	278,050
Arkansas	73,400	73,250
Mississippi	25,950	28,650
Illinois	362,100	380,000
Indiana	18,500	18,300
Eastern (Ill. and Ind. excluded)	90,450	90,350
Michigan	50,000	52,250
Wyoming	73,650	71,100
Montana	17,450	17,750
Colorado	3,350	3,600
New Mexico	97,250	100,700
California	637,100	623,000
Total U. S.	3,647,400	3,623,850
Crude Imports	168,140	94,290
Total New Supply	3,815,540	3,718,140



THESE TWO TALES WILL INCREASE SALES!

1 TITLE TALE

. . . FEATURED ON THE NEW N.B.C. RADIO NETWORK SHOW "MARATHON MELODIES"

Listeners will be paid $100 a week for acceptable "Title-Tales" sent in on cards obtained from Marathon dealers. This will greatly increase traffic through Marathon stations and increase sales and profit.

The new "Marathon Melodies", a live 30-minute musical show, with a wealth of outstanding talent, will make millions of motorists aware of the high quality of Marathon products and Marathon service.

2 MARATHON TELL-TALE CHECK-UP

. . . FEATURED IN THE NEW CHANGE-OVER PROMOTIONS FOR MARATHON DEALERS

This is the exclusive Marathon service which provides motorists with 24 free inspections of their cars. . . . vital checks which invariably lead to extra sales.

Only Marathon dealers have Tell-Tale Check-Up, with its unlimited profit possibilities, giving them a definite advantage over competitors, especially during the vital Fall change-over period.

MARATHON
BEST IN THE LONG RUN

Write, wire or phone for a representative to prove that Marathon means money to you.

THE OHIO OIL COMPANY
INCORPORATED
General Offices: FINDLAY, OHIO

· STATISTICS ·

N.P.N. Gasoline Index

	Dealer T.W. Cents Per Gallon	Tank Car
Sept. 16	8.79	5.12
Month ago	8.87	5.35
Year ago	9.71	6.14

Dealer index is an average of "undivided" dealer prices, ex-tax, in 50 cities.

Tank car index is a weighted average of 9 wholesale markets for regular-grade gasoline.

Weekly Changes in Crude Oil Stocks*

(Thousands of barrels)

Grade or origin	Aug. 31	Sept. 7	Change from Aug. 31
Pennsylvania Grade	4,681	4,755	+ 74
Other Appalachian	1,393	1,397	+ 4
Lima-Michigan	1,361	1,348	— 13
Illinois-Indiana	20,906	20,537	— 369
Arkansas	3,200	3,227	+ 27
Kansas	7,932	7,796	— 136
Louisiana:	13,947	13,726	— 221
Northern (inc. Mississippi)	4,893	4,872	— 21
Gulf Coast	9,054	8,854	— 200
New Mexico	6,928	7,063	+ 135
Oklahoma	65,776	65,816	+ 40
Texas:	83,352	80,843	—2,509
East Texas	20,302	18,991	—1,311
West Texas	18,417	17,599	— 818
Gulf Coast	19,634	19,523	— 111
Other Texas	24,999	24,730	— 269
Rocky Mountain	16,150	16,316	+ 166
California	36,870	36,564	— 306
Foreign	3,369	3,328	— 41
Total U. S. refinable	265,865	262,716	—3,149
Heavy in California	12,851	12,703	— 148

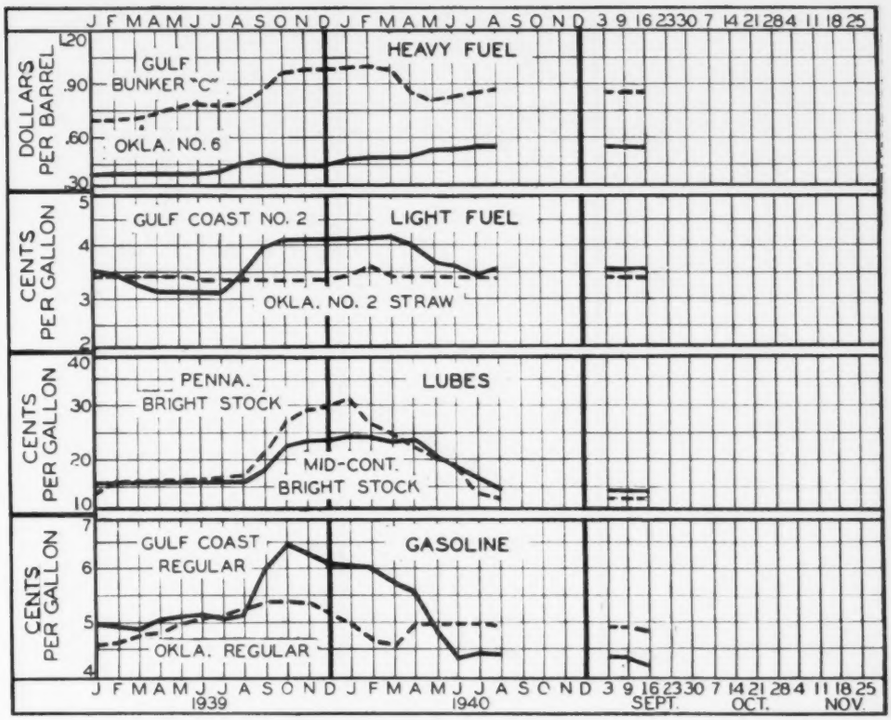
*As compiled by U. S. Bureau of Mines.

Retail Posted Gasoline Prices At Service Stations in 50 Cities

	Net Dealer Price	Indicated Dealer Margin	Total "Gas" Tax*	Apparent Prvlg. Posted Retail Price Incl. Tax
Portland, Me.	7.3	3.9	5.5	16.7
Manchester	7.0	2.5	5.5	15.0
Burlington, Vt.	8.0	3.7	5.5	17.2
Boston	6.5	1.5	4.5	12.5
Providence	6.6	3.4	4.5	14.5
Hartford	6.5	2.5	4.5	13.5
Buffalo	5.1	2.1	5.5	12.7
New York	7.0	2.5	5.5	15.0
Newark	8.1	3.8	4.5	16.4
Philadelphia	8.0	2.0	5.5	15.5
Dover, Del.	8.0	2.0	5.5	15.5
Baltimore	8.25	4.55	5.5	18.3
Washington	7.5	3.0	3.5	14.0
Charleston, W. Va.	10.55	4.05	6.5	21.1
Norfolk, Va.	9.75	4.55	6.5	20.8
Charlotte, N. C.	9.5	4.0	7.5	21.0
Charleston, S. C.	9.75	3.25	7.5	20.5
Atlanta	7.5	4.0	7.5	19.0
Jacksonville	6.5	3.5	8.5	18.5
Birmingham	9.0	4.0	8.5*	21.5
Vicksburg	8.5	5.0	7.5	21.0
Memphis	9.0	4.8	8.5	22.3
Lexington	8.0	3.5	6.5	18.0
Youngstown, O.	8.0	3.0	5.5	16.5
South Bend	10.3	4.2	5.5	20.0
Chicago	9.1	2.44	4.5	16.04
Detroit	8.1	3.25	4.5	15.85
Milwaukee	9.8	4.1	5.5	19.4
St. Paul-Minneapolis	9.7	4.0	4.5	18.2
Fargo, N. D.	11.2	3.5	5.5	20.2
Huron, S. D.	10.5	4.0	5.5	20.0
Omaha	9.4	3.5	6.5	19.4
Des Moines	9.4	4.0	4.5	17.9
St. Louis	8.7	3.2	4.5*	16.4
Wichita	7.8	3.5	4.5	15.8
Tulsa	7.0	2.5	5.5	15.0
Little Rock	8.0	4.0	8.0	20.0
New Orleans	7.75	4.05	8.5	20.3
Houston	7.0	3.0	5.5	16.5
Albuquerque	9.0	5.5	7.0**	21.5
Denver	8.0	4.0	5.5	17.5
Casper, Wyo.	11.0	5.0	5.5	21.5
Butte, Mont.	9.0	4.0	6.5	19.5
Boise, Idaho	12.0	4.0	6.6	22.6
Salt Lake City	10.5	4.0	5.5	20.0
Reno, Nev.	11.0	4.0	5.5	20.5
Phoenix, Ariz.	11.0	4.0	6.5	21.5
San Francisco	9.0	4.0	4.5	17.5
Portland	9.5	4.0	6.5	20.0
Spokane	11.0	4.0	6.5	21.5
Average 50 Cities	...	...	...	...

*Includes 1c City Tax. **Includes 0.5c City Tax.

REFINERY TANK CAR PRICES


J F M A M J J A S O N D J F M A M J J A S O N D 3 9 16 23 30 7 14 21 28 4 11 18 25
DOLLARS PER BARREL
GULF BUNKER "C"
HEAVY FUEL
OKLA. NO. 6
CENTS PER GALLON
GULF COAST NO. 2
LIGHT FUEL
OKLA. NO. 2 STRAW
PENNA. BRIGHT STOCK
LUBES
MID-CONT. BRIGHT STOCK
GULF COAST REGULAR
GASOLINE
OKLA. REGULAR
1939
1940
SEPT.
OCT.
NOV.

Petroleum Supply and Demand
July and 1st 7 months of 1940 and 1939

(Thousands of barrels)

	July 1940	June 1940	July 1939	—January— 1940	—July— 1939
NEW SUPPLY:					
Domestic production:					
Crude petroleum	113,244	111,690	110,937	801,145	734,328
Daily average	3,653	3,723	3,579	3,761	3,464
Natural gasoline	4,684	4,401	4,175	31,025	29,025
Benzol (a)	279	263	191	1,757	1,204
Total production	118,207	116,354	115,303	833,927	764,557
Daily average	3,813	3,878	3,719	3,915	3,606
Imports: (b)					
Crude petroleum in bond	....	200	395	790	2,694
Crude petroleum for domestic use	3,981	3,488	2,539	21,333	15,860
Refined products in bond	(c) 661	942	2,029	8,777	11,405
Refined products for domestic use	2,000	2,056	608	14,400	4,048
Total new supply, all oils	124,849	123,040	120,874	879,227	798,564
Daily average	4,027	4,101	3,899	4,128	3,767
Increase in stocks, all oils	7,147	2,416	3,588	48,587	4,402
DEMAND:					
Total demand	117,702	120,624	117,286	830,640	794,162
Daily average	3,797	4,021	3,783	3,900	3,746
Exports:					
Crude petroleum	5,607	5,692	7,304	32,022	42,253
Refined products	(d) 6,219	8,516	9,622	49,935	68,505
Domestic demand:					
Motor fuel	53,865	55,459	50,508	332,487	308,726
Kerosine	4,257	3,952	3,710	39,305	33,772
Gas oil and distillate fuels	7,493	7,327	6,938	94,300	78,157
Residual fuel oils	23,800	24,749	23,442	190,937	179,352
Lubricants	1,871	2,146	1,982	13,677	13,035
Wax	108	78	62	633	530
Coke	602	509	454	3,949	3,794
Asphalt	3,619	3,137	3,048	13,988	13,599
Road oil	1,629	1,275	1,585	4,016	4,338
Still gas	6,286	6,418	5,920	42,123	37,958
Miscellaneous	215	207	182	1,115	1,295
Losses	2,131	1,159	2,529	12,153	8,848
Total domestic demand	105,876	106,416	100,360	748,683	683,404
Daily average	3,415	3,547	3,237	3,515	3,224
STOCKS:					
Crude petroleum:					
Refinable in U. S.	263,498	261,971	270,570	263,498	270,570
Heavy in Calif.	13,204	13,334	14,375	13,204	14,375
Natural gasoline	7,584	7,000	7,123	7,584	7,123
Refined products	289,071	283,905	279,380	289,071	279,380
Total, all oils	573,357	566,210	571,448	573,357	571,448
Days' supply	151	141	151	147	153

(a) From Coal Economics Division. (b) Imports of crude as reported to Bureau of Mines; all other imports and exports from Bureau of Foreign and Domestic Commerce. (c) No imports into non-contiguous territories in July. (d) Exclusive of 9,000 bbls. exported from non-contiguous territories but inclusive of 850,000 bbls. shipped from U. S. to territories.

Launch New Program for Nebraska Jobbers

PAUL H. ENGLER

● "A really constructive program" for the independent oil jobbers in Nebraska has just been completed and is being presented to all marketers in the state, reports Paul H. Engler, president of Nebraska Petroleum Marketers, Inc.

Part of the New program was the selection of A. H. Mann, Omaha, as executive secretary. Mr. Mann has worked with the United Press and other news syndicates, as well as being former field representative with the League of Nebraska Municipalities and the American Municipal Assn. Mr. Mann, a native of Virginia, attended the University of Nebraska and served in France during the World War. Mr. Engler speaks to members of Mr. Mann's ability as follows:

"Mr. Mann understands business administration and apparently has the ability to quickly analyze existing problems and formulate a plan for their solution. As no two problems are identical in detail, he intends to visit you personally and discuss your problems from your own particular angle. I am sure that you will enjoy his visits."

Mr. Engler has been in the oil industry since 1927 when he took over Rock County Oil Co. at Bassett, Neb. He has been active in association affairs for the past 13 years.

N. P. M.'s offices have been moved from Lincoln to 203 Sunderland Bldg., 15th and Harney St., Omaha.

A. H. MANN

NATIONAL PETROLEUM NEWS

VOLUME 32 WEDNESDAY, SEPTEMBER 18, 1940 NUMBER 38

Many Oil Men To Be Exempt In Draft Law

N. P. N. News Bureau

WASHINGTON, Sept. 17.—A majority of otherwise eligible employes in the oil industry probably will be exempted from the draft because of the importance of their jobs to national defense, according to the joint committee on selective service.

This will be true of employes in production, refining and transportation operation, commission officials said. However, they were uncertain about how many workers in marketing would be regarded as essential to the nation's defense.

Predictions of the officials on the effect of the new draft law, signed Monday by President Roosevelt, in the oil industry is based on the new policy of not unduly disturbing vital war industries and thus avoiding a serious World War mistake.

Officials state the draft will work out in the case of oil industry employes as follows:

All workers between the ages of 21 and 35 inclusive will register upon October 16, except those specifically exempted under presidential order because of membership in the National Guard or officers Reserve Corps.

Subsequently, those selected in a national lottery in Washington will be called before the local draft boards to determine whether they should be placed in Class 1, consisting of those available for immediate military service.

Those found not to belong in Class 1 and who will not be needed for the present military training program will be classified as follows:

Class 2, those whose service is deferred because of the importance to the nation of services being rendered in civilian life.

Class 3, those deferred because of dependents within the meaning of the law.

Class 4, those deferred by law or because of obvious reasons such as insanity, physical unfitness, or lack of citizenship.

Oil Burner Installations Banned in Canada

OTTAWA, Sept. 16.—A two-year prohibition, beginning today, on sale of fuel oil in Canada for oil-burning equipment not heretofore fueled with oil has been imposed by Oil Controller Cottrelle. Exempted from the order are new equipment requiring less than 4000 gals. yearly and government plants. Purpose of order is to curtail importation of crude and fuel oils so as to conserve American dollar exchange for war purchases.

Ickes Holds Secret Confab, 'Blitzkrieg' on Oil Rumored

N. P. N. News Bureau

WASHINGTON, Sept. 17.—Interior Secretary Ickes' secret conference with a group of prominent oil men yesterday has spread rumors far and wide that Ickes is again planning a move to gain control of the oil industry.

Secretary Ickes' press representative today confirmed that the conference was held Sept. 16, but Ickes said there was nothing to be said about it.

A Texas newspaper reported that the conference was called by Ickes for purpose of discussing government control of the oil industry.

Among those reported attending the Ickes conference was Walter Teagle, board chairman of the Standard Oil Co. (New Jersey). Reached by NATIONAL PETROLEUM NEWS at Washington today, Mr. Teagle declined comment, indicating that it was up to Mr. Ickes to explain purpose of the conference and what transpired.

Others reported attending, none of whom could be reached by NPN today, were: Charles F. Roeser, Fort Worth, former president of Independent Petroleum Assn. of America; Paul G. Blazer, Ashland, Ky.; independent refiner; and A. C. Mattei, San Francisco, Honolulu Oil Corp., who in the past has been regarded as spokesman for a group of West Coast oil companies.

Mr. Roeser has been to Washington several times in recent months for conferences on various matters with President Roosevelt and Secretary Ickes. And the Ickes-Roeser talks have

(*Continued on page 12*)

FDR Extends Embargo On Aviation Gasoline

N. P. N. News Bureau

WASHINGTON, Sept. 14.—President Roosevelt, in a proclamation dated September 12, has broadened the ban on shipment of aviation gasoline outside the Western Hemisphere to cover equipment, plans and specifications useful in the production of aviation motor fuel and tetraethyl lead.

The President acted upon the recommendation of Col. R. L. Maxwell, export control administrator, according to a White House announcement, which stated the ban was being extended to "equipment used for the production of aviation motor fuel and tetraethyl lead or any plans or specifications useful in the design, construction or operation of such equipment or in connection with such processes."

Extension of the aviation gasoline embargo was accomplished by adding to present regulations defining products subject to export license control, (NPN, July 31) the following:

"Equipment (excluding minor component parts) which can be used, or adapted to use, for the production of aviation motor fuel from petroleum, petroleum products, hydrocarbons, or hydrocarbon mixtures, by processes involving chemical change; and any plans, specifications, or other documents containing descriptive or technical information of any kind (other than that appearing in any form available to the general public) useful in the design, construction, or operation of any such equipment, or in connection with any such processes. Aviation motor fuel shall mean such fuel as is defined in the regulations issued pursuant to Proclamation No. 2417 of July 26, 1940, as may from time to time be amended.

"Equipment (excluding minor component parts) which can be used, or adapted to use, for the production of tetraethyl lead; and any plans, specifications, or other documents containing descriptive or technical information of any kind (other than that appearing in any form available to the general public) useful in the design, construction, or operation of any such equipment, or in connection with any such processes. Tetraethyl lead shall mean such tetraethyl lead as is defined in the regulations issued pursuant to Proclamation No. 2417 of July 26, 1940, as may from time to time be amended."

Proclamation also embargoed export of plans, specifications and descriptive or technical information of any kind setting forth the design or construction of aircraft or aircraft engines. This, the White House said, will give the President complete control over aircraft export, in view of his proclamation of May 1, 1937, requiring licenses for aircraft and engines.

Move Toward Censorship

Banning "export" of data on aviation gasoline may be the first step to an iron-clad censorship of technical discussions, says Editor Platt. **Page 17.**

Small Refiner Cuts Arkansas Crude 10c

N. P. N. News Bureau

TULSA, Sept. 17.—Root Petroleum Co., El Dorado, Ark. refiner and purchaser of approximately 9000 bbls. of crude daily from nearby fields near its plant, today announced a 10c per bbl. cut in its posted crude prices.

This makes second Mid-Continent refiner with reduced price schedule. Panhandle Refining Co. cut purchase price for certain North Texas crudes 4 to 28c a bbl. on July 26 because of a "too narrow differential" between price of crude and price obtained for refined products.

Root's new postings for all sweet crude it buys begins at 63c for 25 gravity and below crude and increases 2c for each degree to 40 and above at 95c. Sour crudes will be bought on the basis of 53c for 25 gravity and below, increasing 2c for each degree of gravity to 40 and above at 85c, it was explained.

Root officials explained that a decline of 20c a bbl. within the last 60 days in the return from each bbl. of crude refined made the cut in crude price necessary. "This discounts this loss by about half", they added.

New Jersey Standard Prepares For Synthetic Rubber Plants

N. P. N. News Bureau

NEW YORK, Sept. 16.—Plant construction for the large-scale production of synthetic rubber can be started immediately by Standard Oil Co. (N. J.), its subsidiaries and affiliated companies in the event the government asks them to go into this work, the parent oil company has announced.

Extensive studies have also been made by these companies with a view to increasing the nation's supply of toluol, constituent of trinitrotoluene (TNT), a company official said, adding, "A subsidiary operating company has recently delivered for testing purposes 2 tank cars, or 20,000 gals. of nitration grade toluene produced synthetically, and the new product has proved entirely satisfactory."

Proposal has been submitted to the government by Humble Oil & Refining Co., Texas, to produce nitration grade toluene in quantity approximately as great as the total coal tar production of toluol now available.

"The form contract submitted by the Humble company is similar to several contracts already entered into by the government for the manufacture of munitions. Under such a contract, Humble would erect and operate a government plant at cost plus a fixed management fee, or on the same basis, would operate a plant previously constructed by the government," the Jersey company stated.

Los Angeles Acts To Prevent Sabotage

LOS ANGELES, Sept. 14.—As part of the Los Angeles City Council's plan to prevent sabotage of vital defense industries, a new ordinance has been passed making it mandatory to post signs reading "Trespassing — Loitering — Forbidden by Law".

Oil companies here must post such signs at every tank farm, refinery, compressor plant, marine terminal, pipeline pumping station, reservoirs used for bulk treatment, bulk handling or bulk storage of petroleum or petroleum products.

Oil States Capable Of Supplying Needs, Says Head of Union

FORT WORTH, Sept. 15.—Stressing the ability of producing states, refineries and transportation agencies to supply necessary oil requirements for national defense, John L. Coulter, president of the "Oil Workers' (C.I.O.) Union," spoke to more than 200 delegates attending the union's 11th annual convention here last week. He said:

"Today we are about to enter the most crucial period that our great country has ever endured. Oil and its products, which we produce by our toil, are the most important factors of the present great world conflict and for the defense of our nation and our treasured institutions.

"We are the people who produce this indispensable commodity and who will play a great part in the coming years in the economic life of our nation. We must look to the future with confidence and strive to give a good account of ourselves."

Gasoline Stocks Cut By G.C.R.A. Members

HOUSTON, Sept. 15. — Gulf Coast Refiners Assn. membership withdrew 146,919 bbls. of gasoline from storage and increased stocks of kerosine and several of the heavy products the last half of August. Crude runs were up approximately 3%.

Refinery runs at member plants averaged 70,713 bbls. daily the last half of August, representing 62% of potential capacity the report said. G. C. R. A. reports that total refinery operations at the Gulf coast dropped from 90% and above of potential refining capacity to 79-82% during August.

Of the total gasoline stocks held by G. C. R. A. members Aug. 31, 1,032,580 bbls. were aviation grade, up 66,065 bbls.; 1,945,973 bbls. were motor fuel, down 209,677 bbls.; and 55,752 bbls. were blending naphtha, down 3307 bbls.

Kerosine stocks increased 73,393 bbls. during the last half of August, diesel gas oil 4091 bbls. and Bunker "C" 88,770 bbls.

Adequate Stock Aviation Crude, Wilson Reports

N. P. N. News Bureau

WASHINGTON, Sept. 16.—Results of a survey just completed indicate an adequate supply of both 100-octane and 91-octane aviation gasoline crudes to meet all peace time training requirements, the office of Dr. R. E. Wilson, defense commission oil advisor, reports.

Described by Dr. Wilson's office as presenting a more favorable picture than was previously indicated, the survey shows that certain minor changes in refinery equipment to step up production of synthetic blending agents will make available sufficient aviation gasoline for all peace-time training contemplated under the present defense program.

This is true both of the 100-octane gasoline which will be required for advanced training of pilots in regular army and navy fighting planes, and the 91-octane fuel needed for training planes to be used in basic instruction, it was said.

Survey, as interpreted by Dr. Wilson's office, indicates that the main aviation gasoline problem will be an adequate supply of crudes against the day when the United States has built enough airplanes to rank as a first-class air power.

Ickes Holds Secret Confab, 'Blitzkrieg' on Oil Rumored

(*Continued from page* 13)

given rise to reports that the secretary of interior is seeking industry support for his oil-control plans. Although the I.P.A.A. is on record as against federal oil control, there are some among its membership who favor some sort of federal oil umpire to set allowables for each state and bring about uniformity in production practices among the states.

Still pending in Congress is the Roosevelt-Ickes bill for federal oil control, introduced by Congressman Cole, Md., at President Roosevelt's request. Efforts to pry the bill out of the Cole Oil Subcommittee so far have failed, although Chairman Cole has several times appeared on the verge of giving "an interim report" on the bill's status.

From time to time there have come reports recently, some from deep within New Deal circles, that Secretary Ickes was seeking to have President Roosevelt issue some sort of "emergency order" under the guise of national defense needs, to bring the oil industry under Ickes' control.

Adding fuel to Ickes' efforts in this direction is the fact that the bituminous coal industry is worried that fuel oil will make even deeper inroads in their business, now with coal prices to be fixed this fall by an Ickes commission. The coal people strongly support Ickes' efforts at federal oil control.

Defense Officials Not There

Reports in the Southwest that defense commission officials had participated in the Ickes conference went aglimmering here today when it was learned definitely that neither Dr. R. E. Wilson, defense commission oil advisor, nor his assistant, Dr. C. C. Monrad, had been at the conference.

Col. Thompson In the Dark On Ickes Conference

By Telegraph

AUSTIN, Tex., Sept. 17.—Texas oil officials are as much mystified by Secretary Ickes conference with oil men yesterday as rest of the oil industry. Questioned by NATIONAL PETROLEUM NEWS, Col E. O. Thompson, member of Texas Railroad Commission, said:

"We've been unable to find out anything about Ickes-Roeser meeting down here, and know of no reason as to why they should be meeting regarding Federal control. We're in the dark about the whole thing except we've heard rumors such a meeting was planned. No reason has been disclosed to us as why there would be a meeting."

Col. Thompson reiterated that he was opposed to federal oil control. "There is plenty of oil and gasoline," he said. "The complaint has been that there is too much."

NADC Reports On Divorce Bill

N. P. N. News Bureau

WASHINGTON, Sept. 17.—Defense Commission this week filed with Attorney General Robert H. Jackson its report on the National Defense aspects of the proposed oil anti-trust suit divorcing marketing and transportation operations.

Saying he lacked time to consider the report as he went to the train, Jackson indicated that it would receive prompt attention upon his return from Speaker Bankhead's funeral in Alabama.

Mr. Jackson, at a press conference on the Thursday preceding, said the report will be used as a basis for determining whether the oil suit should be filed.

Published reports to the contrary, the only copy filed by the defense commission seemingly went to Jackson, since White House Secretary Stephen Early late Monday denied that the report had been received at the White House and was on the President's desk.

Lower Illinois Crude Output Keeps Skimming Plants Down

N. P. N. News Bureau

CHICAGO, Sept. 14.—Virtually all skimming plants in the Illinois field continued shutdown as conditions in the Illinois crude market remained generally unchanged the past week, according to reports here. New well completions, however, were said to be taking up much of the slack in the decline of flush production, with output holding relatively steady at an estimated 380,000 bbls. daily. Actual figures for the week were not available from the field, at this writing.

Nine skimming plants, with total capacity of around 15,000 bbls. a day were reported shutdown last week, with 2 remaining skimmers in the field reported operating at about half of capacity.

Three cracking and skimming plants, Pana Refining Co., at Pana; Allied Oil Corp., at St. Elmo, and Cascade Refining Co., at Selmaville, all were reported operating.

Gasoline Sold Locally

Gasoline from refineries now operating in the field is said to be sold locally generally within economical trucking distance of the plants. While some of the fuel oil—especially when skimming plants were in operation—had been moving into Chicago, little or no light or heavy oil is reported now moving into the Windy City.

Observers here generally see little likelihood of any great change in the Illinois crude or refining situation in the near future. As crude continues tight—and reports are that no under-the-market oil was available from any source—it is believed that skimming operations which follow flush production would remain at a minimum.

Output Leveling Off

While Illinois production has declined some 137,000 bbls. daily in the past 11 weeks, at least one observer close to the Illinois situation in a semi-official capacity predicted to NATIONAL PETROLEUM NEWS that he expects the Illinois field to level off at around 300,000 to 325,000 bbls. daily within the next 6 months.

This, he qualified, was predicated on no further increase in output from new producing horizons.

The drop in Illinois production was due almost entirely to the decline of production from the Devonian limestone, in the 5 pools producing from this structure. Several unsuccessful tests of the Devonian have been made recently in other pools, and drilling in this formation continues, it was reported here. Too, the Trenton and the St. Peter producing zones, below the Devonion, are believed by some observers to hold potentiality.

Drilling activity in the state continues at a rapid pace, however, with more than 400 completions reported during August. New completions are responsible for checking the decline in total output from new pools in the state.

Too, it was pointed out that some pools are consistently producing at an established rate at shallower horizons, and these should effect a stabilization in the rate of production in the state.

New York City Wins Right To Appeal Decision Voiding Price Posting Law

N. P. N. News Bureau

NEW YORK, Sept. 16.—Permission to appeal from the decision handed down Aug. 10 by the Appellate Court of Special Sessions which invalidated the section of New York City's price posting law regulating size of price signs has been granted to city officials by Chief Judge Lehman of the Court of Appeals.

City officials will attempt to show that the law was not an "unreasonable" method of abolishing the "evil", as ruled by the Appellate Court, Assistant Corporation Counsel Stanley Buxbaum, told NATIONAL PETROLEUM NEWS.

Department of Markets is anxious to have the decision reversed because the other section of the price posting law relating to "misleading", "deceptive" and "fraudulent" sales is not sufficient to enable the department to eliminate all of the fraud connected with the sale of gasoline, Mr. Buxbaum said. By restricting the size of price signs, he said, the possibilities for displaying misleading advertising were minimized.

Eighteen more of the approximate 100 New York dealers who were summoned to answer charges of displaying misleading signs appeared last week for hearing at the Department of Markets. They were warned by Alex Pisciotta, director of the Bureau of Weights and Measures, to specify names and grades, as well as prices, on the signs.

No Price Complaints Heard Against Oil

WASHINGTON, Sept. 14.—Oil industry is listed by the office of Miss Harriet Elliott, Defense Commission consumer member, as being among those industries against which no price complaints have been received.

Because of this, no studies have been initiated by Miss Elliott's office into prices of gasoline and other petroleum products, it was stated.

Fair Trade Prices Set by Two Majors

N. P. N. News Bureau

NEW YORK, Sept. 16. — Fair trade minimum resale prices for their branded "regular" and "premium" gasolines have been established by two major oil companies in the city of Boston under provisions of the Massachusetts Fair Trade law.

The Texas Co. reports that it specified a minimum resale price of 13.5c, including taxes, for its house-brand regular gasoline, effective Sept. 10. Minimum for Texaco's premium was set at 15.5c, including taxes.

Cities Service Oil Co. earlier announced that it had specified 13.5c, including taxes, for its house-brand regular gasoline, effective Sept. 9. (NPN of Sept. 11 incorrectly stated Cities Service price as "13.5c, excluding tax"). Minimum for Cities Service's premium was set at 15.5c, including taxes.

Kansas Oil Hearing To Be Held Sept. 26

TOPEKA, Kans., Sept. 17.—Kansas Corporation Commission's next proration hearing will be held Sept. 26 at El Dorado, Kans., in conjunction with the 25th anniversary celebration of the discovery of the El Dorado oil field, it is reported. Purchasers were requested to turn in their market demand requirements for October, which indicated another one month order.

In extending the invitation of the Oil Men's Banquet Committee, Conservation Director T. A. Morgan advised producers and purchasers that elaborate plans had been made to take care of some 5000 guests expected in El Dorado Sept. 26. In addition, a monument commemorating the discovery of the Stapleton No. 1 well, El Dorado's first producer, is planned.

The El Dorado pool of Butler County, 17th largest pool in the U. S. had produced as of Sept. 1 approximately 176,400,000 bbls of oil.

Crude Prices Up 3c In Turner Valley

TORONTO, Sept. 16.—Imperial Oil, Ltd., has announced 3c per bbl. advance in prices it will pay for Turner Valley crude, effective Sept. 12. New schedule begins with 33-33.9 gravity at $1.08 per bbl. with 2c increase per degree of gravity up to $1.70 for 64 gravity and over.

Imperial's postings for crude naphtha and absorption gasoline in the field remain unchanged at $2.14 per bbl. for crude naphtha, 65 gravity and higher; $1.94 for absorption gasoline, 90% recovery, 20-lb. reid vapor pressure; and $2.08 for 90% recovery, 17-lb. reid vapor pressure.

Canada Increasing Montana Crude Demand

Special to N.P.N.

OTTAWA, Sept. 14. — With crude prices strengthening, Montana sources report a 28% increase in demand for Montana crude from the Canadian market, resulting in an increase of 5500 bbls. daily in shipments to Canadian refineries.

Cut Bank field is reported to have been practically stripped of its storage by this demand and all wells have been raised to operating capacity. This is the first time Cut Bank wells have been called on for a capacity production since 1937.

Texas To Consider Drilling Rules

AUSTIN, Sept. 16. — Main topic of statewide hearings by Texas Railroad Commission here Sept. 23 will be a limit on distance an oil well shall be permitted to deviate from a vertical line, Chairman Lon Smith said today. In past, rules have been adopted for particular fields governing amount of permissible deviation but there is no general rule.

Application for hearing was filed by Arkansas Fuel Co. after an East Texas well was drilled on one lease ended up on one of its leases.

Pennsylvania Crude Runs Hit 5-Year Low

N. P. N. News Bureau

CLEVELAND, Sept. 16. — Decline of 15,090 bbls. to 57,686 bbls. in daily average refinery runs of Penna. crude in week ended Sept. 7 was reported today by National Petroleum Assn. This was lowest level of runs in more than 5 years. Last previous low was 56,155 bbls. in week ended June 8, 1935.

High Octanes Give Better Mileage, Auto Engineer Tells Auto Chemists

By N.P.N. Staff Writer

DETROIT, Sept. 12.—"It begins to appear that from now on the car user may prefer to take the benefits of further improvement in fuels and of advances in engineering (of motor car engines) in terms of more miles per gallon," according to Dr. T. A. Boyd, General Motors Corp., speaking before the Petroleum Division of the American Chemical Society here.

"If so, one of the advances that would aid greatly in making higher fuel economies possible would be further increases in octane number of gasoline, or in its degree of freedom from knock," he added.

The principal prospect of a further major improvement in gasoline lies in increased freedom from knock, Dr. Boyd pointed out.

Performance of motor cars, as shown by 6 high-production cars, was boosted 45% during 11 years from 1927 to 1938 while economy, in the same time, was improved by an average of a little over 20%, he said.

Fit Engine and Fuel

Dr. Boyd said in effect that the higher the octane number of a fuel becomes the more strained becomes the relation between octane number and knock tendency, i. e., the more inadequate octane number becomes in predicting knocking tendency or, to put it another way, the more sensitive engine combustion with respect to knock becomes to changes in engine operating conditions. He considered this one of the biggest problems in using high-octane fuels and said this fact will make it increasingly importanat to fit the engine to the fuel and the fuel to the engine.

The extent of possible reward for properly fitting a 100-octane fuel to a motor car engine as compared with 70-octane fuel was shown to be 57% gain in miles per gallon at 20 miles per hour when the engine is adjusted for equal performance at this speed, 43% gain in economy at 40 miles per hour, and 28% gain in both economy and performance at 60 miles per hour.

Lube Tests Needed

One of the primary needs of the future in motor car engine lubrication is a better understanding of the chemistry and physics of lubrication, and of the relationship between the chemical constitution of compounds and their suitability as lubricants, Dr. Boyd said. An advance which is badly needed is the development of laboratory tests for lubricants that will be more truly indicative of behavior in service.

Shortcomings of certain of the newer chemical processes of refining lubricating oils, particularly their tendency to remove valuable constituents, he believes, are being corrected by adding oxidation inhibitors and detergents. Since chemical control of lubricating oil is new, he felt a much better understanding of it is needed.

While many refiners are relying entirely upon additives to make further improvements in lubricants, work has been in progress at Pennsylvania State College to determine whether, by blending selected fractions of lubricating oil distillate, it is possible to improve still further Pennsylvania motor oils.

R. E. Hersh presented a joint paper by himself and M. R. Fenske describing the progress of this work.

The work involved a combination of selective solvent extraction and fractional distillation of a distillate into 124 fractions all of which were classified as to their properties and then reblending selected fractions for tests. While all of the practical aspects of this work have not been determined, the authors believe the knowledge of the characteristics of the narrow fractions give the refiner and technologist a better understanding of the raw materials available and of methods for producing any possible product from them.

The Pennsylvania State College group has also been studying motor oil behavior with respect to varnish or lacquer formation in engines. This is a problem in oxidation of motor oil. Two papers were presented to describe apparatus for studying oxidation in the laboratory, the nature of oxidation products, and factors controlling oxidation stability of lubricating oils. The latter study showed that the rate of oxygen absorption approximately doubles for each 18 degrees Fahr. temperature increase over the range of 280-360 degrees Fahr. It was found possible to reduce greatly the oxidation of certain oils by adding natural or synthetic inhibitors.

J. K. Roberts Heads Petroleum Division

DETROIT, Sept. 11.—J. K. Roberts, director of research, Standard Oil Co. of Indiana, was elected chairman of the Petroleum Division of the American Chemical Society at a business meeting here today terminating the division's two-day sessions during the society's 100th meeting.

M. R. Fenske, Pennsylvania State College, was elected vice-chairman for the coming year and C. R. Wagner, The Pure Oil Co., was re-elected as secretary, a position he has held for the past 11 years except for one year as chairman.

Per K. Frolich, Standard Oil Development Co., retiring chairman, was elected to the board of directors of the division along with E. C. Williams, Shell Development Co.

Oil Chemists Hold Banquet at 100th Meeting of A.C.S. in Detroit

Dinner of the Petroleum Division of the American Chemical Society during the 100th A.C.S. meeting in Detroit. At the speakers' table, on the right of the microphone is Per K. Frolich, Standard Oil Development Co., retiring chairman of the Petroleum Division who presided at all its sessions. Third to his right is W. L. Evans, Ohio State University, A.C.S. president

THE EDITOR'S PAGE

Readers Comments and Opinions will be much Appreciated by—WARREN C. PLATT, Editor and Publisher, Penton Building, Cleveland, O.

Vague But All-powerful Censorship Threatens Oil's Technical Discussions

The technical world of the oil industry is now under what promises to be one of the most far reaching and drastic war censorships in the industry's history.

It is a censorship by presidential proclamation and not by act of Congress.

It is a censorship that individual officials at Washington, bureaucrats, army and navy officials and all else who care to speak "officially" can extend down to forbidding the discussion and distribution of information regarding even left-handed monkey wrenches or any other garden variety of equipment or method now common in the industry, and which in THEIR PERSONAL OPINION is

> "technical information of ANY KIND USEFUL in the design, construction, or operation . . . or in connection with any such process . . . meaning "equipment which can be used, or adapted to use, for the production of aviation motor fuel from petroleum, petroleum products, hydrocarbons, or hydrocarbon mixtures, by processes involving chemical change."

The flexibility of this definition is such that it can be stretched by any power-aspiring authority to include most everything in common use today from the well through the refinery.

There would be no appeal from the bureaucrat's personal opinion as to one's alleged wrong-doing except the chance that one would have of convincing a court—probably a New Deal packed court—as to the unfairness or unconstitutionality of this "law" or its interpretation, when the "culprit" faced the possibility of a $10,000 fine or imprisonment for 2 years or both.

There are two exceptions noted in the "proclamation" to the above limitations that also are susceptible to far reaching interpretations, such as that this interdiction does not include "minor component parts" of equipment nor information "appearing in any form AVAILABLE to the general public."

Here is how this latest blitzkrieg to free discussion came to the oil industry this September 12, 1940, over the seal and signature of Franklin D. Roosevelt, President, and Cordell Hull, Secretary of State.

July 2, 1940, Congress enacted a law "to expedite the strengthening of the national defense." The last section of that law gave the President the authority to curtail or prohibit exportation of war munitions or tools or materials or supplies necessary for their manufacture or servicing. The law said that any presidential proclamation to effect this purpose "shall describe the articles or materials included in the prohibition or curtailment contained therein."

Under this authority the President has issued several proclamations requiring export permits to be obtained from the State Department for a long list of materials that can be used for munitions, including petroleum products and tetraethyl lead.

July 31, the Administrator of Export Control simply announced that he "recommends, and the President approves, the issuance of the following announcement" which says that the export of aviation gasoline will be limited to the Western Hemisphere except for the operation of American owned companies. The law just cited said that this had to be done by presidential proclamation.

September 12, without preliminary notice, the President issued another proclamation in which he said that "I have determined that it is necessary in the interest of the national defense that on and after this date the following described articles and materials shall not be exported from the United States except when authorized in each case by a license."

The "articles and materials" are then described as follows:

"1. Equipment (excluding minor component parts) which can be used, or adapted to use, for the production of aviation motor fuel from petroleum, petroleum products, hydrocarbons, or hydrocarbon mixtures, by processes involving chemical change; AND ANY PLANS, SPECIFICATIONS, OR OTHER DOCUMENTS CONTAINING DESCRIPTIVE OR TECHNICAL INFORMATION OF ANY KIND (OTHER THAN THAT APPEARING IN ANY FORM AVAILABLE TO THE GENERAL PUBLIC) USEFUL IN THE DESIGN, CONSTRUCTION, OR OPERATION OF ANY SUCH EQUIPMENT, OR IN CONNECTION WITH ANY SUCH PROCESSES. Aviation motor fuel shall mean such fuel as is defined in the regulations issued pursuant to Proclamation No. 2417 of July 26, 1940, as may from time to time be amended.

"2. Equipment (excluding minor component parts) which can be used, or adapted to use, for the production of tetraethyl lead; and any plans, specifications, or other documents containing descriptive or technical information of any kind (other than that appearing in any form available to the general public) useful in the design, construction, or operation of any such equipment, or in connection with such processes. Tetraethyl lead shall mean such tetraethyl lead as is defined in the regulations issued pursuant to Proclamation No. 2417 of July 26, 1940, as may from time to time be amended.

"3. Plans, specifications, and other documents containing descriptive or technical information of any kind (other than that appearing in any form available to the general public) setting forth the design or construction of aircraft or aircraft engines."

For some unexplained reason the prohibition as to disclosing information about planes and their engines is not as stringent as that pertaining to the manufacture of their fuel. There is no prohibition of that which might be "useful in the design, construction or operation . . . or in connection with" planes.

New Deal Seeks to Take All Power

In contemplating what powers are possible under this proclamation one must give thought to the character of the New Deal, its policies and its personnel.

The outstanding policy of the New Deal has been to get all possible power over the American people, farmers, labor, finance and, particularly, industry centered at Washington.

An outstanding trait of New Deal personnel has been to carry out this fundamental policy in every way possible, to stretch laws and regulations to the very limit and then a little bit more, and to delegate as much authority as Congress will grant—preferably unlimited—to individuals and commissions whose findings are final.

Then on top of all this we should consider how Roosevelt made his raid on the U. S. Supreme Court and on other federal courts as he frankly said in order to get judges who would interpret laws the New Deal way. That, these New Deal judges seem to be doing as rapidly as opportunity offers.

Also in considering the powers that are sought to be invoked and the others that seemingly are invoked by this presidential proclamation on technical information, we must give weight to the ready denials by New Dealers of the existence of any arbitrary power in rules and statutes or proposed laws they have written. What the New Dealers claim and what they actually try to get are often two entirely different things.

A fair illustration is the legislation now pending in Congress at the personal request of both Roosevelt and Ickes, ostensibly to expedite the development of oil and gas "conservation." Actually, this proposed law would place the oil and gas industry under the most absolute and arbitrary and unlimited authority of a "commissioner" in Ickes office, yet proposed for any industry. Roosevelt in his statements carefully refrained from disclosing the real purpose of the law while Ickes has played true to New Deal policy

in emphatically denying what is in that law. Against these two, their secrecy and denials, are the opinions of governors of southwestern oil states and their associated oil commissioners and conservation officers as well as a host of attorneys.

In view of the New Deal record, therefore, one is warranted in the most careful scrutiny of what a "law" actually says, as contrasted with what its author may say it says. One is also justified in applying to this proclamation, which today is "law," the same method of interpretation that the New Dealers themselves have always used, that is to see what the maximum possible authority and power can be obtained from the language used in the "law" and what is the maximum power that the New Deal judges might hold "constitutional".

Certainly war secrets should not be divulged to anyone except where necessary to successfully carry on a war. During the last war and even during time of peace, the government, the manufacturers and the publishers, exercised the greatest care to see that no war secrets were made public. The publishers and manufacturers during the last war did this voluntarily and without scrutiny of the official censor.

With the government's present effort to make "plans and specifications" of aircraft and their motor fuel, meaning the improvements that are constantly being made, war secrets, no one can quarrel. But what does the government mean by all the rest of the language? Does not that language go far beyond the ostensible purpose of the government's intent? Can it not easily be interpreted to permit censorship way beyond legitimate war secrets?

While this proclamation applies only to one seeking to export information, it may apply to one who might inadvertently make information "available" for export. If that interpretation does not now exist it soon will.

What Do the Words Actually Say?

So looking at the words in their broader meaning and in the light of more stringent enforcement of "war secrecy" just what is actually included under the phrase "Equipment which CAN be USED, or ADAPTED to USE for the production of motor fuel"? The proclamation seeks to exclude "minor component parts" but what are such parts?

If the enforcement of this censorship gets into the hands of some of the ambitious, crusading and even dishonest and ruthless type of men, so many of whom now exist in Washington, what are they going to name for equipment which "can be used or adapted to use" for motor fuel manufacture? Will it be a pump? A motor? A length of pipe? A boiler or even a left-handed monkey wrench?

And just what is a "minor component part"? A boiler?

We not only have the crusading all-inclusive New Deal type of mind to deal with in these interpretations but we will have the minds of many men that may be driven by patriotic fervor to "win the war at all cost" that will get equally screwy and go far from common sense. We saw that nonsense in the last war.

Then what are "other documents containing descriptive or technical information OF ANY KIND"? And which are "useful in the design, construction, or operation of any such equipment, or IN CONNECTION with any such process."?

Will it be possible to describe and publish hardly anything about a refinery except the fence surrounding it, without laying one's self open to prosecution under this phrase especially if the prosecutor likes to grab authority and stretch phrases to the breaking point?

The proclamation seeks to make an exception to all this but the exception appears to be perhaps the most vicious and restrictive part. It says information cannot be disclosed except "that appearing in any form AVAILABLE to the general public."

How "available"?

Who makes it "available"?

Is the owner of the information entitled to make it "available" to the general public?

What if some government censor later decides the information thus published has something remotely to do, in his opinion, with motor fuel? Is the owner of the information liable for having made it subject to "export"?

Will the censor be, or always be, a well trained technical man or may he be one of the typical cub lawyers who infest so many New Deal departments?

In fact just who is the censor today?

Will a technical society be allowed to make information "available" for publication and if so what protection will it have against interpretations with which its technical members quite properly may not agree?

The art of oil refining just as the art of all our mechanical development has come from the free interchange of ideas. Thousands of the world's best technical men are indulging in constructive discussions of oil industry methods, equipment and practices all the time. There is probably hardly a refinery discussion on any subject that does not concern methods or equipment or practices that have something to do, or may have something to do or might have something to do with the manufacture of aviation fuel. Any discussion of ordinary motor fuel is but a beginning of a discussion of aviation fuel.

Any of this information MIGHT have SOME value to "the enemy". But so MIGHT most any other information of every kind whatsoever.

All of this conjecturing as to the meaning of these ambiguous phrases and what a crusading censor might do under them, should not be lightly dismissed as far fetched or nonsensical. Any bar to full and free discussion in this country of every subject is an abridgement of that fundamental right of a free and democratic government.

It has been by the exercise of this right that we have developed our free government this far and it has been by the abrogation of that right that dictators have seized those governments abroad.

This presidential proclamation and what these ambiguous phrases mean is a little thing now but it was by advancing one little thing at a time that the foreign dictators took charge of their countries. Hitler and Mussolini made their greatest strides to dictatorship after getting the little things in the law changed so that they could move forward to their objectives. What they did as they ascended their thrones was substantially in accordance with the law of the moment.

The past 7 years we have seen the New Dealers advancing toward their frankly stated goal of centralizing all power at Washington, of putting government in business and, some say, of socializing the country completely.

Whittle at Right of Free Speech

In these years New Dealers have tried whittling away at this right of free speech in various ways. When caught at it they have loudly and angrily denied the charge but while denying they have been most reluctant to change the rule or proposed law to accord exactly with their professed objectives. The general counsel for the powerful American Newspaper Publishers Assn. has been quite blunt in his statements at times in questioning if the real purpose of the New Deal is not to get control of the free press and to restrict the American right of free speech.

Roosevelt once said in a past political campaign that the blanket powers which Congress had given him were all right while in his hands because he would "protect the public interest" but in a man of lesser ideals, etc., etc., etc., the safety of the country would be imperiled.

The power sought in this presidential proclamation if placed in the "wrong hands" unquestionably, it would seem, could be used to the constant harassment of all men in all industry, as well as oil and aircraft—even to the extinction of free speech and free press.

What chance has an alleged violator of this "proclamation law" if during the heat of war, some of the New Dealers apply an interpretation to this "law", as they have to many another law, in which they claim everything and concede nothing? What chance has such an alleged culprit if the federal courts respond to the New Deal "influence" as much as Roosevelt said they should when he carried on his big fight to "purge" the courts?

This is but one of many important questions that we will be called upon to decide as we approach nearer and nearer to a war, no matter whose it is or where. Many of these questions may seem inconsequential at the moment but if we let them slide and do not face them, we will wake some day to such an accumulation of questions that it will be impossible for any people to decide them, especially under the pressure of war. Then, it is quite certain, the questions will be decided by those who have gained steadily increasing power by the public's waiving its right to decide them.

Our present suggestion is that all technical societies and associations and groups of every kind who have occasion to discuss "technical information of any kind" and which may be "useful in design, construction, operation or connection with" the refining process, each make their own decisions as to what SHOULD

come under this proclamation, as to what actually might give aid to "the enemy" and then stand firm on that decision. Under no circumstances should they be led in their thinking by any commands or requests or whatnot of the authorities at Washington that appear to the technical men to be beyond the scope of preventing real war secrets from reaching "the enemy".

Then these technical and other organizations should study at once the question of causing this proclamation to be reworded so that it only does what its authors say it does. If the New Deal should undertake to maintain that this law will never be enforced in any far-fetched way as indicated in this editorial and that no one need fear, the oil executives, who were defendants in the Madison case, might well recall the experience of the counsel for the Planning & Co-ordination Committee in a similar instance. He took a general letter of authority given by Ickes to have the chairman of the P. & C. Committee's marketing committee "stabilize" the markets of the industry, back to the Petroleum Administrative Board and protested that the authority was too general and vague and that the only way to operate safely under it was for the oil men to bring in each plan in detail before they sought to execute it and have Ickes approve it.

The PAB officers just laughed and said in substance "Why be so fearful? You must think we are going to prosecute you for what you are instructed to do under that letter?"

THEY did not prosecute but Roosevelt's left hand, which seemingly does not always care to know what his right hand does, his Department of Injustice did prosecute for exactly what was done under that letter and then opposed letting the letter be placed in evidence on behalf of the men for whom it was written.

This is only one of many many illustrations of the perfidy of government officials, not just in this administration but in many others.

It all goes to prove that a law should say exactly what it pretends to say and nothing more. It never is too much trouble nor is time illspent to change a law that does not thus conform to common sense and justice.

The constitutional rights of American citizens require that this censorship "law" by presidential proclamation be changed before an administration that has been drawing the totalitarian lines tighter and tighter about this country, can proceed with further mischief under it.

New York Oil Trades Golf Party Draws 125 Entries

Somewhere between the first and nineteenth hole, above gentlemen of the sod were "shot". They are, from left to right: W. H. Correa, A. Ditman, J. D. Brandli, E. D. Madden and R. A. Ludlow

N.P.N. News Bureau

NEW YORK, Sept. 14.—Murky skies and threatening rain failed to dampen the spirits of the golfers, 125 of them, who vied for honors in the golf tournament at the 20th annual fall outing of the Oil Trades Assn. of New York, Sept. 10 at Pelham Country Club, Pelham Manor, N. Y. Over 200 attended the dinner in the evening.

C. A. Breen, Sylvester Oil Co., won the Bert Squier trophy, being low gross winner in Class A among members.

Complete list of prize winners follows:

PRIZE WINNERS

CLASS A—SCRATCH TO 16

1st Low Gross, C. A. Breen, Sylvester Oil Co., 77.

2nd Low Gross, J. P. McFadden, General American Transportation Corp., 79.

Low Net, J. F. Renick, Renick & Mahoney, Inc., 86-16-70.

2nd Low Net, Harvey Lewis, Lewis Transportation Corp., 82-10-72.

3rd Low Net (tie), Frank Boyd, Service Station Equipment Co., 84-10-74 and J. H. Blakney, Colgate-Palmolive-Peet Co., 84-10-74.

CLASS B—HANDICAP 17 to 25

Low Gross, K. R. Ware, Sun Oil Co., 86.

2nd Low Gross, J. R. Stephensen, Colgate-Palmolive-Peet Co., 87.

Low Net, Chas. Christman, Smith & Nichols, Inc., 93-23-70.

2nd Low Net, Frank Mahoney, Renick & Mahoney, Inc., 96-25-71.

3rd Low Net, Ken Patterson, Stanco Distributors, 90-18-72.

CLASS C—HANDICAP 26 to 35

Low Gross, S. Z. Weaver, Weaver & Hugi, Inc., 98.

2nd Low Gross, Sam Margolis, First National Oil Co., 104.

Low Net, H. W. Callender, Atlas Steel Barrel Corp., 109-35-74.

2nd Low Net, J. F. Gebhard, Socony-Vacuum Oil Co., 106-30-76.

CLASS A—GUESTS—SCRATCH TO 16

Low Gross, A. F. Reeve, 77.

Low Net, C. R. McCarren, 83-15-68.

CLASS B—GUESTS HANDICAP 17 & ABOVE

Low Gross, Hy. Wogish, 91.

Low Net, A. A. Broder, 100-35-65.

KICKERS HANDICAP DRAWN NO. 82

First Prize, B. B. Bloys, 95-13-82.

Second Prize, E. Ruloff, 96-14-82.

Joseph C. Smith

Third Prize, A. Jansen, 98-16-82.

Fourth Prize, Joe Corris, 105-23-82.

Fifth Prize, O. Sample, 117-35-82.

From this picture, it appears that the 18 holes must have been tough. Following men of the ball and tee, left to right, are: A. F. Reeve, J. F. Rennick, Steve Mandell and Harvey Lewis

OIL TAX NEWS

Illinois Marketers Urge 4c 'Lube' Tax For Reclaimed Oils

N. P. N. News Bureau

CHICAGO, Sept. 16.—The Illinois Petroleum Marketers Assn. in an exchange of correspondence with officials of the Treasury Department, has urged that the Internal Revenue Department apply the 4c per gal. federal tax on lubricating oils to reclaimed oils, it was learned from G. L. Primm, association secretary.

The Treasury Department, however, reports that its powers are not broad enough to cover the imposition of the federal tax on reclaimed oil.

Meanwhile, it was learned, some Illinois marketers have petitioned members of the House Ways and Means Committee, and their congressmen for action on a bill (H.R. 10414) by Oklahoma Congressman Disney to amend the Internal Revenue code to place reclaimers of lube oils in the same class as the original manufacturer and make their output of reclaimed, renovated, or cleaned oil, subject to the federal levy.

Provisions of the Disney bill, however, would not apply unless the reclaimed oil is sold, and presumably would not hit large commercial users who reclaim oil used in their own equipment, or operation.

The Disney bill is now before the Ways and Means Committee in the House.

J. G. Sinclair Heads Illinois A.P.I.C. Unit

N. P. N. News Bureau

CHICAGO, Sept. 10.—J. G. Sinclair, Chicago, division manager of Shell Oil Co. was elected chairman of the Illinois American Petroleum Industries Committee at a meeting of the state executive committee here today. Mr. Sinclair replaced Walter Wade, Chicago attorney, who had been chairman of the committee for several years.

Mr. Sinclair urged the 35 members of the executive committee to co-operate in the formation of county and city committees throughout the state. It is planned to hold a series of meetings throughout the state to acquaint oil men with the work of the state committee and the part each oil man can play in the work.

Mr. Sinclair told committee members the importance of the oil industry in Illinois which now directly employs 116,573 men and women, approximately 2% of the state population.

Propose Bill To Tax Imported Oil, Coal

N. P. N. News Bureau

WASHINGTON, Sept. 16.—Congressman Lewis, Ohio, has introduced a bill (HR 10489) which, in addition to levying a 3c per gal. tax on imported oil, taxes imported coal $1 per ton. Purpose of measure is to protect domestic coal industry from "ruinous" foreign competition, Lewis said.

23 Additional Oils Escape Excise Tax

N. P. N. News Bureau

WASHINGTON, Sept. 16.—Internal Revenue Bureau has ruled that 23 new oils shall be added to its list of those not subject to manufacturers' excise tax when sold direct by the manufacturer to consumers for non-lubricating uses. Tax must be paid on these oils, but credit may be claimed for tax paid on sales upon evidence they were resold to consumers for non-lubricating uses. List of oils follows:

Agricultural spray oil, air conditioning oil, battery oil, cordage oil, cotton softener oil, electrical impregnating oil, floor sweeping compound, fur dressing oil, ink oil, metal wash oil, meter oil, molding oil (for rubber tires), oil used as a non-lubricating component material in the manufacture of a non-taxable product, paint oil, paper impregnating oil, putty oil, rayon oil, rust preventative, silk oil, slab oil, soap stock, technical white oil, and wood-preserving oil. (S.T. 905)

Ohio's Commercial Motor Truck Taxes Estimated to be One-Third of Revenue

N. P. N. News Bureau

CLEVELAND, Sept. 16.—In pointing out the importance of commercial motor vehicles in supporting Ohio's highway program, John L. Marsh, executive secretary, Petroleum Industry Committee of Ohio, estimates that motor trucks contribute approximately one-third of the state's gasoline tax revenue, which amounted to $50,486,000 in 1939. Mr. Marsh said:

"Out of $28,625,000.00 of revenue in motor vehicle registration fees received in 1939 by the state, $8,117,000.00, or 34.8%, represented truck registration fees, according to figures released by the United States Public Roads Administration.

"The average truck in this state pays about twice the taxes paid by a passenger car. Most of the trucks are small delivery trucks used by farmers and merchants, with a load capacity of 2 tons or less.

"Contrary to some thought, even large trucks do not cause heavy wear of road surfaces. The pneumatic tires with which virtually all trucks are now equipped, cushion the load. Also, double wheels distribute the load so that the pressure at any point on the road is little more than that exerted by the tires of an ordinary passenger car."

Virginia Tax Receipts Up

RICHMOND, Va., Sept. 16.—Gasoline tax collections in Virginia were 11% higher this past July than in July 1939, according to the Division of Motor Vehicles.

Total collections for July, 1940, amounted to $1,879,389.35 on 37,587,787 gals. compared with $1,691,242.70 on 33,824,854 gals. in July 1939.

Gasoline tax collections for the first 7 months this year were up 6.4% over last year's collections, with $11,388,883.75 being collected this year against $10,693,917.85 collected for the like period in 1939.

Frederick R. Speed

Penn Grade Group Names F. R. Speed As Auto Engineer

OIL CITY, Pa., Sept. 16.—Frederick R. Speed, Chesapeake City, Md., has been appointed automotive engineer for the Pennsylvania Grade Crude Oil Assn., states J. E. Moorhead, executive secretary.

Mr. Speed succeeds Harry M. Rugg who was killed last July in an automobile accident.

Mr. Speed is a graduate of Lehigh University and has been engaged in various branches of the automotive industry for more than 20 years. After graduation, he spent several years with motor vehicle manufacturers and served with the U. S. army as a technical officer.

At the conclusion of the World War, Mr. Speed joined Packard Motor Car Co., and in succeeding years worked for makers of the Maxwell car, Ethyl Gasoline Corp., Standard Oil Co. of New Jersey and Bijur Lubricating Co. When he worked for Ethyl, he handled technical and promotional activities.

WITH THE ASSOCIATIONS

Technical Committee Named By Natural Gasoline Group

N. P. N. News Bureau

TULSA, Sept. 15.—With a well-defined program of research and study lined out for the fiscal year of 1940-41, Natural Gasoline Assn. of America today announced personnel of the association's principal committees appointed to carry out the program.

In speaking of the research work planned for the year, President George P. Bunn, Bartlesville, of Phillips Petroleum Co., said the agenda was so crowded with valuable and time-consuming projects that division of work among sub-committees will be necessary to conclude some projects before the annual convention next spring.

Committee Named

The technical committee, with C. R. Williams, Ponca City, Continental Oil Co. as chairman, is concerned with its studies of low temperature fractional distillation apparatus and procedure, the president said.

Preliminary studies conducted co-operatively among 15 laboratories are about completed, he reported, and correlation of findings will begin soon under the supervision of Dr. G. G. Brown, Ann Arbor, University of Michigan and Dr. W. J. Podbielniak of Chicago. Objectives of this project is the standardizing of procedure to the fullest degree possible, it was said.

Committee is expected to conduct a similar investigation of fractional analysis of liquids. A technical meeting, possibly at Dallas late in November, will probably make plans for correlation of present studies and arrange for the new project, according to the announcement.

Chairmen Announced

Chairmen and vice chairmen of N.G.A.A.'s principal committees as announced by Secretary William F. Lowe are as follows: Economics—J. R. Jarvis, Dallas, Lone Star Gasoline Co., chairman; H. E. Means, Monroe, La., Coltexo Corp., vice-chairman.

Gas Contract—R. A. Worley, Shreveport, Parade Gasoline Co., chairman and John T. Oxley, Tulsa, Warren Petroleum Corp., vice-chairman. Gas Testing—H. L. Oder, Bartlesville, Cities Service Oil Co., and H. D. McLean, Shreveport, Hercules Gasoline Co., Inc. Legal—Wilbur J. Holleman, Tulsa, Glen Rose Gasoline Co., and W. P. Z. German, Tulsa, Skelly Oil Co. Research and Educational—B. R. Carney, Tulsa, Shell Oil Co., Inc., and W. F. Fulton, Shreveport, United Gas Pipe Line Co.

Specifications and Outage—Howard E. Felt, Tulsa, Warren Petroleum Corp., and Harry Wheeldon, Dallas, Lone Star Gasoline Co. Technical—C. R. Williams, Ponca City, Continental Oil Co., and H. H. Beeson, Shreveport, Sabine Valley Gasoline Co., Inc. Traffic—F. A. Shellhorn, Tulsa, Hanlon-Buchanan, Inc., and E. C. Kitching, Bartlesville, Phillips Pet. Co.

Frequent Oil Change Drive Approved by Ohio Marketers

By N.P.N. Staff Writer

COLUMBUS, Sept. 12.—Statewide co-operation by the entire Ohio oil industry in a drive to insure greater car-owner satisfaction through the protection offered by regular periodic lubrication, was indicated in Columbus, Sept. 11, by representatives of oil companies and independent oil marketers.

The meeting was called by the Ohio Petroleum Marketers Assn. to discuss participation in the oil change program of the American Petroleum Institute's special committee on lubrication.

The lube committee's cartoon sound film, "The Curious Case of the Mumbling Maniac", was shown to illustrate some of the confusion that exists in the motorist's mind on proper oil change practice, and demonstrate how this confusion can be overcome by the oil marketer. R. A. Ludlow, director of the A.P.I. lube committee, discussed success of the campaign to date and outlined future plans.

He said the West Coast oil industry had adopted the program and companies would launch its individual campaigns on Oct. 1, with banners, "A" boards and announcements.

Eric Weber Talks

Eric Weber, Eureka Oil Co., Cincinnati, president of O. P. M. A. said it was important that the program when first launched should be definite and should progress along logical steps. He held there was more to the program than advertising oil or in interesting car owners in any particular brand of oil.

He also said it was important that every marketer in Ohio, and in other states, should have a complete understanding of the program and that it was important that the supplying companies understand the jobber's needs. He suggested that everyone who had anything to do with sales in the industry should attend educational meetings, including marketers, dealers, salesmen, truck drivers and so on.

A round-table expression of views by those attending the meeting favored starting this program in Ohio, Oct. 1. That is, this would be the date when it would be explained to dealers at meetings now scheduled.

It was found that many companies had already decided to start on that date, and that for many, such a program would be tied in with winter change-over plans now in the making. Several companies said they planned to tie the 1000-mile drain campaign into their fall program.

Although this was the first meeting of an independent oil association called to support the lubrication program of the A.P.I. committee, it was expected that similar meetings would be held by other associations in the near future.

Plan Fall Meeting Of Virginia Group

Special to N.P.N.

RICHMOND, Sept. 14.—An interesting and instructive program has been arranged for the fall convention of the Virginia Oil Men's Assn. to be held at the Cavalier Hotel, Virginia Beach, Friday, Sept. 20, the association announces.

As a result of an intensive drive, the largest membership in the history of the association has been reached. Speakers will be Don Russell, refinery technologist for Pure Oil Co., who will discuss gasolines and motor oils, followed by an open forum; and Winder R. Harris, editor of the *Norfolk Ledger-Dispatch*, who will talk on current events.

On the entertainment side, a golf tournament and fishing party has been scheduled for the afternoon, to be concluded that evening by a banquet and dance at the Beach Club. Ladies will be entertained throughout the day with sightseeing, bridge, and tea.

The V.O.M.A. is made up of all types of wholesale oil marketers — independent jobbers, commission agents and major company managers and representatives.

* * *

Virginia Jobbers to Meet

Special to N.P.N.

CLIFTON FORGE, Va., Sept. 13.—While Virginia jobbers, as members of the Virginia Oil Men's Assn., will attend the V. O.M.A. fall convention at Virginia Beach on Sept. 20, there will be no formal meeting of the Virginia Petroleum Jobbers Assn. at that time, according to M. B. Whiting, Whiting Oil Co., president of the jobbers' association.

Mr. Whiting said the jobbers were planning a separate meeting for the latter part of October, probably in Roanoke, Va.

Maryland Receipts Drop

WASHINGTON, Sept. 14.—Gasoline consumption in Maryland in July totaled 29,095,256 gals., representing a decrease of nearly 1% from June when the total was 29,378,060 gals., it is reported.

DEATHS

A. C. Woodman Dies

A. C. Woodman

A. C. Woodman, 73, Merion, Pa., died Sept. 11. Funeral services were held Sept. 14. Mr. Woodman, widely-known in the oil industry, was one of the organizers of Union Petroleum Co. which built a large export business as representative of Independent refiners and was active in supplying allies during the World War.

After the war, when Union Petroleum was sold to Sinclair Refining Co., Mr. Woodman remained with Sinclair's export department for a time and then formed his own company, Acewood Petroleum Co. In 1928, Acewood was merged with Walburn Petroleum Co. to form Richfield Oil Corp. of New York. Mr. Woodman was president of Richfield of New York, until his retirement, June 1, 1933.

Following a stroke several years ago, he had been confined to his home because of ill health.

Mr. Woodman was long active in affairs of the National Petroleum Assn., being first vice-president from 1906-07; second vice-president, 1912-14; and trustee, 1911-19; 1925-26.

Funeral services were held at Mr. Woodman's home on Mallwyd Road, Merion, Pa. Many prominent oil men and other friends were present.

* * *

John B. Kelsey

Death claimed 102-year-old John B. Kelsey Sept. 12, one of the oldest veteran leasemen and scouts in the oil industry. Retired from the oil industry several years ago when the Prairie Oil & Gas Co. was merged with Sinclair Oil & Gas Co., Mr. Kelsey moved to the Rio Grande Valley in Texas to operate a citrus grove. He died at his Harlingen, Texas home.

Mr. Kelsey was born at Ithaca, N. Y. Feb. 18, 1838 and moved "West" when the Indian country was opened, later representing the old Prairie company at Chickasha. He is survived by his widow (his second wife), two daughters and one son, Dana H. Kelsey of Tulsa, vice-president of Sinclair Oil Co.

* * *

William W. Ward

William W. Ward, 48, vice-president of Brooks Oil Co., Cleveland, died this past week at his home, Newberry, O. His death came only four months after that of his father, Alexander M. Ward, 76, president of Brooks for 40 years.

The younger Mr. Ward commenced work with Brooks in 1912, becoming a service station manager. He attended Cornell University. He leaves a widow, Helen E., a son, daughter and brother, Alfred W., of Cleveland, president of Brooks.

* * *

Loren B. Roberts

Loren Britton Roberts, 51, Cleveland, Ohio district manager for Socony-Vacuum Oil Co., died here Sept. 13 after an illness of several months.

Mr. Roberts was born at Brainard, Minn., attended New York University and worked as reporter and assistant advertising manager of the Minneapolis Tribune. Later he was editor and business manager of the San Luis Obispo (California) Daily Telegram. During the first World War, he was commanding officer of an air squadron.

In 1919, Mr. Roberts started working with Vacuum Oil Co. as salesman at Minneapolis and became manager of that branch office. When Vacuum merged with White Eagle, he was transferred to Cleveland as president of the Great Western Oil Co. until its merger with Vacuum Oil Co. in 1933, when he became manager of the Cleveland district.

Later he went to Cincinnati to become vice-president of Queen City Petroleum Products Co. until its merger with Socony-Vacuum Oil Co., then becoming manager of the Cincinnati branch.

Mr. Roberts leaves his wife, Elizabeth Hicks Roberts, 3 daughters, a son, a brother and a father.

* * *

Frank G. Driscoll

Frank G. Driscoll, 47, member of Sinclair Refining Co.'s legal department and one of the founders of North American Gasoline Tax Conference, died Aug. 27 at Elizabeth, N. J. He had been an attorney with Sinclair since July 1, 1920, joining the company's Chicago office. Later, he was transferred to Atlanta where he was in charge of legal affairs for the company's southeastern district. At time of his death, he was in charge of legal department's office for the eastern district. Burial was at Somerset, Mass.

Born in Concord, N. H., he served in Navy during the World War. Surviving are his widow, Mrs. Anne Ryan Driscoll, a daughter, Miss Anne C. Driscoll, his father, David J. Driscoll, a son, Gerald M. Driscoll, his father, David J. Driscoll, Penacook, N. H., and a brother, David F. Driscoll, Los Angeles.

Atlantic Refining Cuts 'Gas' Prices

NEW YORK, Sept. 16.—A 0.5c reduction in its dealer tank wagon prices for gasoline in the states of Pennsylvania, Delaware, Maryland, Virginia, and North Carolina has been announced by Atlantic Refining Co. The reduction in Pennsylvania, which did not include the cities of Pittsburgh, Erie or Scranton, was effective Sept. 12.

Effective same date, the company's commercial tank car prices in Pennsylvania were reduced 0.5c, with the exception of Philadelphia and Scranton.

Tank-wagon reductions in Maryland, Virginia and North Carolina were effective Sept. 10.

Company also announced a 0.6c reduction in dealer tank-wagon prices in New Jersey, effective Sept. 10.

Mohawk Petroleum Corp. Fined $1000 In Suit

N. P. N. News Bureau

LOS ANGELES, Sept. 14. — After filing *nolo contendere* pleas in the West Coast anti-trust suit, Mohawk Petroleum Corp. was fined $1000 by Federal Judge Paul J. McCormick. Thirty-three other defendants have already changed their pleas of not guilty and have been fined sums ranging from $1000 to $4500. Some of the remaining seven defendants are understood to have opened negotiations with government attorneys, seeking a settlement.

Nicholas Heads Refiners' Group

Special to N.P.N.

GRAND RAPIDS, Sept. 16. — Organization of the Oil Institute of Michigan has just been perfected to co-ordinate Michigan refiners' efforts to better meet demands of Michigan consumers and to establish better acceptance of Michigan petroleum products.

L. V. Nicholas, well known national oil expert, is president of the Institute, Eva Arnstein is secretary and treasurer and the following Michigan refiners are members of the Board of Directors with Mr. Nicholas, Walter E. Anderson of Naph-Sol Refining Co., Muskegon; Ben J. Skinner of Midwest Refineries, Inc., of Alma and Grand Rapids; C. L. Maguire of Roosevelt Oil Co., Mt. Pleasant and Reid Brazell of Leonard Refineries, Inc. of Alma, Michigan. Headquarters will be at 910 First National Bank Building, Grand Rapids.

Mr. Nicholas was for years an independent jobber in Omaha, then president of the National Petroleum Marketers Assn. and then president of Warner-Quinlan, a Cities Service subsidiary.

Tennessee Group to Meet

NASHVILLE, Sept. 16.—Fall convention of Tennessee Oil Men's Assn. is scheduled for Oct. 30, 31 and Nov. 1, states Lucile Warden, executive secretary.

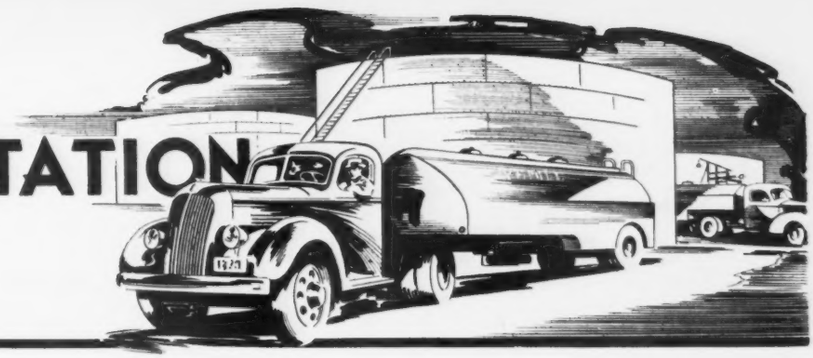
Indiana Marketers To Hear Pettengill

INDIANAPOLIS, Sept. 16. — When representatives of major and independent oil companies meet Oct. 9 and 10 for the fall convention of the Indiana Independent Petroleum Assn., one of the events will be an address by Samuel B. Pettengill, former Indiana congressman, and author of "Hot Oil", "Smoke Screen", and other books.

Other speakers include: N. Bond Hedden, Chicago, Ethyl Gasoline Corp.; R. A. Ludlow, director of American Petroleum Institute's lubrication committee; and Homer L. Chaillaux, Indianapolis, director of National Americanism, American Legion.

Ralph W. Carney, vice-president and sales manager of Coleman Lamp Co. will talk on "Welding the Weakest Link". The industry's old-timers are forming an Indiana Club and the banquet Oct. 9 will feature a program in their honor.

OIL TRANSPORTATION



Rails Propose Hike In Truck-Rate Scale

Special to N.P.N.

ST. LOUIS, Sept. 16.—Rails have proposed a new set of "truck-competitive" rates to apply on petroleum shipments in carload lots between points in Kansas and Oklahoma and from Kansas and Oklahoma to certain Arkansas and Missouri destinations and interstate between certain Kansas points up to 85 miles.

Proposed rates represent increases of from 0.5 to 3c a cwt. above present "truck-competitive" rates and are an effort by rails to eliminate certain complaints about discriminations.

Under combination rates made up from the "truck-compelled" rates, certain Oklahoma refiners could ship to Kansas City on 25c and 27c a cwt. rates, compared with the Group 3 to Kansas City rate of 28c. Under the proposed rates, combinations equal the Group 3 to Kansas City rate of 28c.

Rails Drop Proposal To Cut 'Natural' Rate

N. P. N. News Bureau

TULSA, Sept. 16.—Southwestern rails late last week advised shippers they were no longer progressing the proposal for a 50c a cwt. rate (3.30c a gal.) on natural gasoline shipped from Oklahoma plants to Marcus Hook, Pa. for export. Reduced rates would have applied to other southwestern manufacturing centers, maintaining same differentials above or below Group 3 rates as now exists on domestic shipments.

Rails said the proposal had been shelved as result of "nonconcurrence expressed by Trunk Line Assn." because of insufficient justification offered for the rate. If established, it was said, the rate would result in reduced rates from origins in "official territory, involving unnecessary shrinkage in revenue."

The proposed 50c a cwt. rate represented a 29c cut below the domestic rate between Oklahoma and Marcus Hook.

'Lowest Possible' Rates Authorized by ICC

WASHINGTON, Sept. 16. — Interstate Commerce Commission has authorized interested railroads under a suspension of long-and-short-haul provisions to establish temporarily, subject to complaint and investigation, lowest possible rates on gasoline and related commodities in tank-car loads from Bettendorf, Davenport and Burlington, Ia., to points in Illinois not more than 236 miles distant.

ICC Calendar On Oil Trucking

DECISIONS

Terminal Transport Company, Inc., Indianapolis, Ind., (MC-22229). Issuance of certificate approved, upon compliance by applicant with certain conditions, to continue operation as a common carrier by motor vehicle of batteries and petroleum products in containers, from Indianapolis, Ind., to specified points in Alabama, Georgia, North Carolina, and South Carolina, over regular routes.

Emanuel Alboum, Paulsboro, N. J., (MC-86188, sub. No. 6). Issuance of permit approved, upon compliance by applicant with certain conditions, to operate as a contract carrier by motor vehicle of petroleum products, in bulk, in tank trucks, from Paulsboro, N. J., to points in a described area in Pennsylvania, between a described area in Pennsylvania, and a described area in New York, and from Port Socony, N. Y., to a described area in New Jersey and New York, over irregular routes.

John D. Bair, Jr., Eddystone, Pa., (MC-16095). Applicant found entitled to continue operation as a common carrier by motor vehicle, of petroleum and petroleum products, in containers, from Marcus Hook, Pa., to Bridgeport, Conn., and empty containers in the reverse direction, over irregular routes.

W. F. Mitchell and B. W. Robertson, El Dorado, Ark., (MC-1304). Issuance of a certificate approved, upon compliance by applicant with certain conditions, to continue operation as a common carrier by motor vehicle of oil-field and refinery equipment and supplies, between points in Arkansas, Louisiana, and Oklahoma, over irregular routes. Application in all other respects denied.

HEARING

Petroleum Transport Inc., Lansing, Michigan, (MC 27962, Sub. 3) Sept. 27, Lansing, Michigan, on application to extend operations as a contract carrier by motor vehicle in the transportation of petroleum products in the States of Michigan and Ohio, between Toledo, Ohio, and points within 10 miles thereof, and points located in Michigan, over irregular routes.

Large Co-op Plans Own Truck Fleet Unless Rails Adopt Trainload Rate

N. P. N. News Bureau

CHICAGO, Sept. 16.—One large mid-western oil co-operative is laying plans for shipping its products by trucks from water terminals and pipelines, unless trainload rates are placed into effect by the first of the year, it was learned here today.

This company which imports about 22,000,000 gals. of petroleum products into one mid-western state has authorized the purchase of 3 transports. These will be used for experimental purposes. It is planned to have a transport fleet large enough to haul its requirements in operation by the early months of next year.

This company formerly received virtually all of its petroleum by rail but has been utilizing more for-hire transporters recently. Total shipments in August were 116 truck loads, while up to the middle of September, 148 truck loads have been received.

Trainload rates, which will come up for public hearing Oct. 9 at Oklahoma City are still a live subject, in the opinion of this marketer, who added that one group of shippers who receive about 45,000 cars of petroleum by rail annually are pushing for the new rate basis.

This marketer pointed out that the establishment of a water-competitive rate of 13c per hundredweight for 20 cars of crude daily from southern Illinois to Sheboygan, Wis., as indicative of the feeling of Western Trunk Line roads. It would be inconsistent, he added, for them to place into effect a water competitive cut of 50% for a movement of 20 cars a day, and to neglect the possibility of holding their petroleum tonnage from the Southwest to midwestern marketing points. The application of trainload rates from the Southwest are based on the same arguments which resulted in the establishment of the water-competitive rate on Illinois crude, he said.

Joins Socony-Vacuum's Fleet

Latest addition to Socony-Vacuum's inland-waters fleet, the St. Paul Socony, was launched recently at Decatur, Ala. Mrs. R. R. Irwin, whose husband is Socony's assistant manager of the White Star Division, was sponsor. This new towboat is powered by two 8-cylinder 750-horsepower diesel engines, and is capable of towing six 9-ft. barges, transporting 60,000 bbls of petroleum products

New Outlets Found For Texas 'Natural'

N. P. N. News Bureau

TULSA, Sept. 16.—Two factors—the virtual collapse of export markets and mounting production — have over the past several months increased natural gasoline supplies in Texas and caused manufacturers in that area to seek new outlets for their products.

Gradually this natural gasoline, left "homeless" by loss of exports market, is being partially absorbed in domestic markets.

Two domestic markets were open to Texas natural gasoline —(1) to refiners and jobbers for blending with refined gasoline, and (2) to refiners and crude purchasers as replacement for crude processed at refineries.

Texas manufacturers packed their brief cases with order blanks and began the rounds of refiner and jobber prospects in an effort to find markets for their surplus. So far this year, those calls on refiners and jobbers have resulted in a substantial increase in shipments. During the first half of 1940, Texas natural gasoline shipments to refineries have exceeded deliveries in 1939. In some months, 1940 deliveries to refineries were doubled and trebled.

New Outlets Developed

Some manufacturers developed an entirely new outlet for their products. During 1940 they have shipped substantial quantities of natural to refinery-owned bulk plants. No shipments during the first six months of 1939 were recorded from the Texas Gulf to refinery bulk plants. Jobber and retailer takings of Texas natural also increased this year above the previous year.

Another market they developed to a greater degree in 1940 was that outlet to refiners and crude purchasers. Manufacturers found natural gasoline to be an excellent substitute for crude at refineries, provided price was sufficiently low to be comparable to crude. They developed this crude replacement market and it absorbed another slug of their excess supplies.

Supply Out of Balance

But supply was still out of balance with demand. During the past spring and summer it was found that these additional markets were insufficient at times to absorb all of the approximately 67,307 bbls. weekly of natural estimated to have formerly moved in export channels.

Competition increased and prices dropped to 1.25c for Grade 26-70 FOB Breckenridge early this spring, far below cost of manufacture at many plants. As result, Texas competition has invaded Oklahoma —where supplies were "tight" —has spread to other manufacturing areas, necessitating reduction of prices or the narrowing of marketing areas, it was pointed out.

Losses in sale of natural gasoline have, to some extent, been discounted by revenues from butane and propane sales. But the profits from sale of butane and propane could not be utilized to the fullest extent, since demand for liquefied petroleum gas levels out in the summer.

Price Curve Turns Upward

Now that fall demand for natural gasoline is increasing, sales prices for Grade 26-70 seem to be on the upgrade too, according to most manufacturers. Sales at 1.75 and 2c FOB Group 3 and 1.75c FOB Breckenridge, 0.25c above summer price levels, have been reported the past week. Advancing prices for "natural," however, bring up the question of whether the expected increase in blending demand for natural will be sufficient to counteract any loss in demand for natural as crude replacement. If the "natural" price exceeds that level at which "natural" can be used as a crude substitute, demand from this source is expected to decrease.

Natural gasoline available to blenders from some Mid-Continent plants may not have as high vapor pressure this fall as in previous years, since increased utilization of butane and propane is expected to deprive natural of some of its lighter fractions.

In attempts to further increase the use of natural gasoline as a "pepper-upper" for refined motor fuel, manufacturers have pointed out that gasoline marketed by some refiners has a comparatively low vapor pressure. The quality of the finished motor fuel for fall and winter use, they say, may be increased considerably by use of natural gasoline. In order to eliminate partially a double transportation cost on the natural, it is suggested blending operations be carried on at bulk plants.

If the vapor pressure of finished motor fuel is increased only a fraction of a pound, according to one manufacturer, volume of natural used in bringing this about wuld absorb production that formerly went into export circles.

While 15 states have vapor pressure requirements, it was believed added use of natural would not approximate prescribed maximums. Shown below are the maximum vapor pressure specifications for winter and summer motor fuels as prescribed by state requirements:

	Winter	Summer
Alabama	10	8
Arizona	12	10
Connecticut	12	10
Florida	12	12
Illinois	12	12
Indiana	12	12
Iowa	12	12
Mississippi	12	0
North Carolina	12	10
North Dakota	12	8
Rhode Island	12	10
Tennessee	10	8
Utah	13	9
Virginia	12	10
Wyoming	13	13

U. S. 'Gas' Demand Increases But Exports Hit 4-Year Low

N. P. N. News Bureau

WASHINGTON, Sept. 16. — Domestic demand for motor fuel in July was 53,865,000 bbls. or between 6 and 7% higher than a year ago, but about 1,000,000 bbls. below expectation, Bureau of Mines reports. Gasoline exports declined to 1,686,000 bbls., the lowest figure since March, 1936.

Pre-tax buying in June affected the July demand as predicted, Bureau stated. Withdrawal from gasoline stocks of about 4,500,000 bbls. in July was less than anticipated, though larger than a year ago.

Yields of both gasoline and distillates increased in July — gasoline rising from 43.1% in June to 43.5% in July, distillate from 13.1% to 13.4%. Gasoline yield was 1% lower than a year ago, the distillate yield 1.5% higher.

Domestic demand for both light and heavy fuel oils was higher than a year ago, though gains were moderate. Heavy-fuel oil stocks are considerably lower than a year ago, but light fuel stocks are about 4,000,000 bbls. higher.

Production of crude petroleum continued to decline in July when the daily average was 3,653,000 bbls. or 70,000 bbls. below June. Output in July was only 2% higher than a year ago, the smallest increase for any month in 1940.

Important event in production for month was the decline in Illinois where the daily average fell from 506,500 bbls. in June to 445,300 bbls. in July. Today initial of new Illinois wells in July was hardly more than half the June output, but a more important factor was the rapid decline of the Devonian wells, Bureau declared. Production in Oklahoma and Kansas increased. California's output changed little. A relatively small decline occurred in Texas.

Producers Seek Allowable Hike In Texas Pools

FORT WORTH, Sept. 15. — Producers in the K. M. A. and Hull-Silk pools of North Texas have petitioned the Texas Railroad Commission for increased allowable production from their wells, contending present allowables deprive them of their share of the state's output.

Stanolind Oil Purchasing Co. is entering the K. M. A. field as a new purchaser, with indications purchases may be extended to the Hull-Silk area later. Magnolia is constructing an 8-inch line into the Hull-Silk pool.

Hearings on the petition for increased K. M. A. allowable have been scheduled before the commission Sept. 20. No action has been taken on the request by Hull-Silk operators.

Increased allowables and exemptions from the shutdown order already have been granted the Walnut Bend field of Texas, where Sinclair-Prairie is the major producer and purchaser. Allowables in this field were drastically cut several weeks ago when the Sinclair company cut its purchase price for all North Texas crudes.

Texas May Vote For New Oil Board

AUSTIN, Sept. 14.—A drive in the next Texas Legislative session for a new oil board, separate from Texas Railroad Commission, was predicted by state legislators returning to their homes this week after the state Democratic convention at Mineral Wells, Tex. Rep. P. L. Anderson, San Antonio, said many legislators favored oil board's creation.

Refining Technology

SYNTHETIC RUBBERS Development of a single synthetic rubber from petroleum hydrocarbons that will equal natural rubber in every respect has grown into one of developing a variety of synthetic rubbers, each of which exceeds natural rubber in certain respects while closely resembling Nature's product in other properties. This trend was reported by Dr. Per K. Frolich and others in the first technical report on "butyl rubber", a development of Esso Laboratories. The report was presented two different times during the 100th meeting of the American Chemical Society last week.

Aside from its practical value, the discovery of butyl rubber is expected to have far-reaching theoretical consequences in eliminating many theories concerning the factors contributing to rubber-like properties. Rubber chemists have tended to associate elasticity and other important properties of rubber with its chemical unsaturation whereas it is now shown that many of these properties can be obtained without residual unsaturated compounds in the vulcanized product.

The fundamental difference between natural and butyl rubber lies in the degree of unsaturation, the butyl rubber having no more than enough unsaturated compounds to allow vulcanizing. Further unsaturation was found to contribute to unstability of the rubber product. The degree of unsaturation has been put under control by discovery of a method of co-polymerizing olefins with small amounts of diolefins. An economic advantage of butyl rubber was said to be the fact that the simple olefins from refinery gases are utilized rather than the more expensive highly purified diolefinic materials generally employed in synthetic rubber manufacture.

In addition to greater stability and durability, advantages of better stretch, lack of taste, odor, and color, and resistance to mineral acids were mentioned. Like natural rubber, however, it is not resistant to swelling in petroleum solvents.

A program of determining the suitability of butyl rubber for tire manufacture has been undertaken at the request of the Army and Navy Munitions Board and is still in progress.

* * *

THE POLYFORM PROCESS Chemical and engineering research aimed at cracking crude oils without so much loss of gases has been in progress for 10 to 15 years. An outgrowth of this work was the development of an independent refining process known as polymerization which could be used as an accessory to any conventional cracking unit. Less has been written about processes which combine cracking or reforming and polymerization although they too have been in operation as long as have successful thermal and catalytic polymerization processes.

Two of the oil companies that have been active in the development of a combined cracking and polymerization process are Gulf Oil Corp. and Phillips Petroleum Co. By combining their patents the Polyform process came into being. Four years of plant size operation of this process have gone by and two new units of large capacity are under construction. The article in this issue by Povl Ostergaard, Gulf Oil Corp., and E. R. Smoley, The Lummus Co., builder and licensor of the process, discloses for the first time the features of this process.

* * *

DIRT IN ENGINES Motor car engine designers are said to be gonig after dirt in fuel and lubricating oil in a big way in the new models just coming out. While oil filters and air cleaners have been used almost universally for the past several years, it may be expected that the changes in designs will have their greatest value in supplying car salesmen with something to talk about.

An oil bath air cleaner is making its appearance this season on one of the new models which is expected to have more effectiveness than conventional types. Motorists should know, however, that the problem of engine deposits is not eliminated by such devices, as many laboratory engine tests have shown.

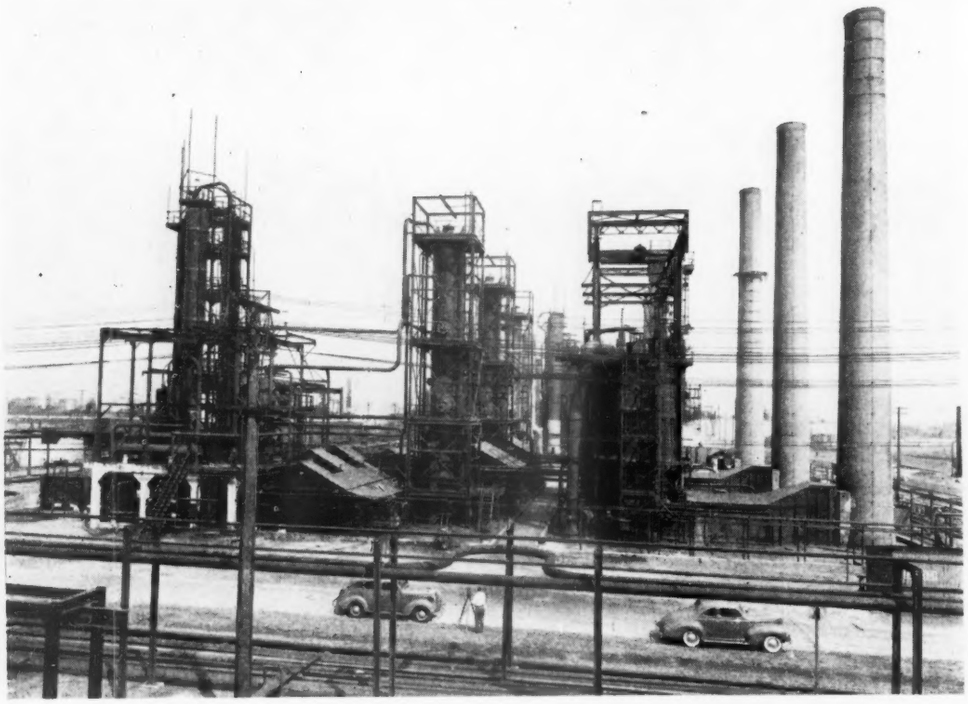
Motor oil is to be kept cleaner in another new model by use of the "first built-in oil cleaner in the industry that cleans 100% of the oil before it goes through the pump and into the bearings." It is to be hoped that motorists will not depend upon such a statement to justify indefinite mileage between oil changes. Few will ask whether it cleans out 100% of the undesirable materials in the oil, which of course it cannot do.

This cleaner depends upon oil flow reversal to throw particles of dirt downward into a settling chamber which is concentric with the oil inlet pipe. Oil flowing upward through the inlet pipe is reversed in direction twice before passing into the engine. In all of the tests ever run with this device there has never been enough dirt collected to make it necessary to empty the settling chamber, it is reported.

* * *

SABOTAGE A new factor in the consideration of refinery safety is beginning to be openly recognized as the first year of European war is completed. The possibility of sabotage has been considered by oil companies privately since the beginning of the war a year ago but Socony-Vacuum's recent message to its employes is the first open admission which asks a general alertness of all employes for evidences or indications of acts which would injure them or the industry which they serve.

While research development, and engineering divisions are not so susceptible to destructive sabotage, they may be subject to leaks in valuable information. Analyses of vulnerable points are under way and fire hazards are being reduced with more vigor than ever before. Guards will be increased, plant visitors' passes given out more discriminately, and additional flood lights installed as required. Clean and orderly premises will go a long way toward discouraging acts of sabotage.—M. G. V.



A two-coil combination crude polyform unit at Gulf's Girard Point refinery

721.3

The Gulf Polyform Process

By Povl Ostergaard[1] and Dr. E. R. Smoley[2]

ABSTRACT

A new refining process, known as the Gulf Polyform Process, has combined into one operation the pyrolytic processing of oils to higher conversion per pass than is possible in an ordinary thermal unit with polymerization of refinery gases produced either from the oil under conversion or from an outside source. The process produces high yields of high-octane gasoline possessing excellent distillation, lead susceptibility, blending, and Research or Road octane appreciation characteristics from any type of charging stocks. Specification aviation gasoline which will lead to 90 C.F.R.-A.S.T.M. octane number with less than 3 cc. tetraethyl lead, and 80 octane number unleaded safety fuel can be made from polyform distillate.

The process has been in commercial operation for over four years. Five units ranging from 1500 to 22,000 barrels per day charge capacity are operating in Gulf Oil Corp. refineries. Two naphtha polyform units with a total production of 14,000 barrels per day of 76 C.F.R.-A.S.T.M. octane number gasoline are being built by The Lummus Co., licensor of the process under Gulf and Phillips Petroleum Co. patents. Investment and operating costs are comparable to thermal cracking units and operating problems are no more difficult, making the process practical and economical in the production of high yields of 75-82 C.F.R.-A.S.T.M. octane number gasoline from any full crude, as well as in converting outside propanes nad butanes along with naphtha into high yields of 76-82 C.F.R.-A.S.T.M. octane number gasoline.

Introduction

The ever increasing demand for more gasoline, and for higher octane number, has made it necessary for the oil industry to explore all possibilities for increasing the yield of gasoline from the crude from existing installations, and improving the yield and the quality of gasoline by new refining methods.

One of the recent accomplishments in the refining industry is the development of the Polyform process by the Process Division of the Engineering, Construction, & Process Department of the Gulf Oil Corp. The Polyform process differs from ordinary thermal cracking in that the oil is processed in admixture with varying amounts of normally gaseous hydrocarbons, particularly propanes and butanes, and in that the oil is subjected, in such admixture, to higher temperatures and higher degrees of conversion per pass than would be possible under otherwise similar conditions without excessive coke formation in the cracking tubes. The process results in the production of gasoline in higher yield and of higher octane value than can be obtained by subjecting the same oil to a conventional thermal cracking operation.

The Polyform process has been used in large scale operation in the plants of the Gulf Oil Corp. for over four years with routine refinery runs of 1500 to 2500 hours on stream. At present there are five polyform units in regular refinery operation with oil charge capacities ranging from 1500 to 22,000 barrels per day. The Lummus Co. is now building two naphtha polyform units to produce 10,000 barrels and 4000 barrels per operating day of 76 to 77 C.F.R.-A.S.T.M. octane number gasoline from heavy naphtha and outside propanes and butanes. The larger unit is

[1] Gulf Oil Corp.
[2] The Lummus Co.

for a major oil company at the Gulf Coast and the other unit is for the Gulf Oil Corp.

The present trend for higher octane gasoline requirements is met economically by increasing yield and raising the octane number of any gasoline and any type of charging stock. The Polyform process can improve on all types of thermal cracking operations including reforming, gas oil cracking, vis-breaking, coking, or complete combination crude cracking. It is possible to convert 20-30 C.F.R.-A.S.T.M. octane number naphtha stock, with a boiling range of 250°F. to 450°F. to 76-82 C.F.R.-A.S.T.M. octane number gasoline with high yields. From a whole crude, such as Mid-Continent, East Texas, or West Texas, it is possible to obtain 3-4% higher overall gasoline yield of 72-74 C.F.R.-A.S.T.M. octane number. The fuel gas produced varies from 0.70 to 0.85 specific gravity, free of butanes and containing only 2-15% propanes. Polyform gasolines have high octane numbers with road octane appreciation of from 3 to 8 numbers, appreciation from C.F.R.-A.S.T.M. octane to Research octane of 9 to 14 numbers, high blending values, excellent distillation characteristics, and good lead susceptibility.

The polyform distillate offers no additional treating problems. Clay treating and sweetening, or acid treating, rerunning, and sweetening, depending upon sulfur content, are conventional. A small amount of gum inhibitor is added for gum stability. By a modified operation the naphtha polyform process can be conducted to yield a distillate of approximately 80-84 octane number C.F.R.-A.S.T.M. This distillate has a very high aromatic content of from 20% to 35%, which is predominantly toluenes and xylenes. By cold acid treating and rerunning, this high octane distillate can be processed to yield approximately 40% of 77-79 octane C.F.R.-A.S.T.M. aviation gasoline of satisfactory boiling range, acid heat, and stability, which will lead up to 90 C.F.R.-A.S.T.M. octane number with less than 3 cc. tetraethyl lead. Besides the aviation gasoline cut, a 35% cut of aviation gasoline safety fuel with an octane number of 80 C.F.R.-A.S.T.M. can be produced with properties as indicated later in the text. The balance of 25% is treating and polymer loss.

Process Design is Simple

While the development of the process represents a distinct departure from prior practice, polyform units are simple in design, and offer no greater operating problems

Contents. . .

REFINING TECHNOLOGY

September 18, 1940

The Gulf Polyform process, a combination of cracking and polymerization into one operation, is described for the first time by Povl Ostergaard, Gulf Oil Corp., and Dr. E. R. Smoley, The Lummus Co. High yields of high-octane gasoline with other desirable properties are produced. Five units now operating and two building range from 1500 to 22,000 barrels per day capacity R-330

Counting on octane number as being the principal prospect of major improvement in motor fuel, T. A. Boyd tells the American Chemical Society that the automotive industry will probably use gains in fuels as well as in engines first to better operating economy R-347

Systematic separation of lubricating oil distillate and construction of three-dimensional diagrams of their properties show how to blend the best there is into Pennsylvania lubricants, Pennsylvania State College group finds R-357

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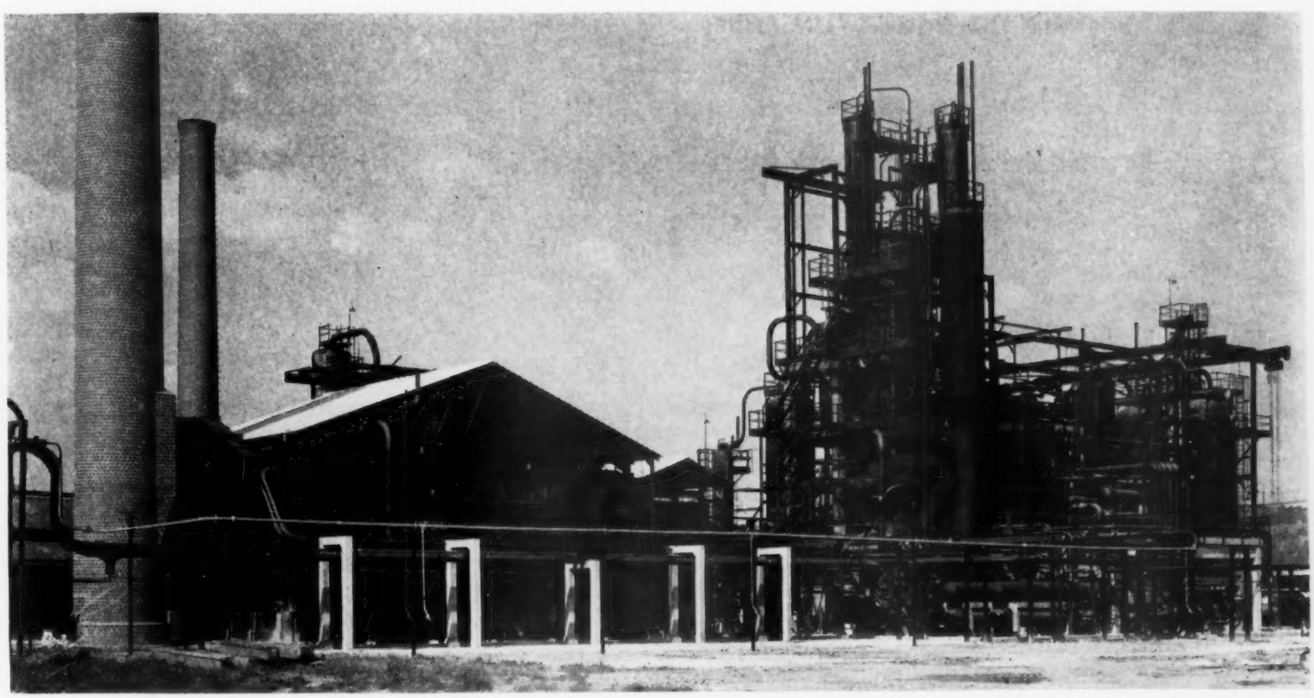

Naphtha polyform units at the Cincinnati refinery of Gulf Oil Corp.

Reduced materially the cost of making 100 octane gasoline over other methods.

Reduced the capital cost by one third over that of another type of unit designed to do the same thing.

These results were obtained on a recent Kellogg-built unit—the largest ever designed and constructed for this particular process.

When you have a processing problem consult the Kellogg Company because advantages similar to the above may be available to you.

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LICENSING AND CONSTRUCTION AGENTS under United States and foreign patents for:
Catalytic Processes for Cracking, Reforming, Dehydrogenation, Alkylation, Desulphurization

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than conventional thermal cracking units, as the plant equipment consists of pumps, heaters, fractionating towers, heat exchangers, etc., with all of which any cracking coil operator is thoroughly familiar. The instrumentation of these units allows complete automatic control of oil levels, pressures, temperatures, flow rates, etc., leaving to the operators supervision and fine adjustments for optimum results. Investment costs and utility requirements are only slightly higher than for conventional cracking units. The slightly higher costs are due to higher operating temperatures and pressures.

All oil cracking operations represent a compromise between yield and product quality. More drastic cracking of relatively heavy stocks tends to result in higher yields of gasoline while more drastic cracking of light stocks such as naphtha tends to reduce the yield of gasoline. It is known that the octane number of gasoline rises with the degree of conversion per pass, and that the reaction velocity of cracking rises sharply with temperature. More intense cracking ordinarily tends to increase the yield of normally gaseous hydrocarbons.

Inasmuch as the octane number or anti-knock value of the final cracked gasoline from any given stock is largely a function of the degree of conversion per pass, it is of course desirable to operate at as high a degree of conversion per pass as possible, providing the yield and quality in other respects of the gasoline product are satisfactory. The yields and octane numbers which can be secured from any given cracking stock depend naturally, to some extent, on the design of the still, but for any stock there is a definite "crack per pass" which cannot be exceeded without serious deposition of coke in the cracking coil, as any pressure still operator knows. The ordinary thermal cracking process, therefore, has definite limitations in magnitude of yields and octane numbers obtainable.

"Crack-Per-Pass" Increased

Any process by which the "crack per pass" can be increased means higher octanes and greater yields of light products. The gasoline yield can be further increased by converting part of the gases produced to gasoline hydrocarbons. The Polyform process does exactly this. Gaseous hydrocarbons, such as C_3 and C_4 hydrocarbons are introduced to the polyforming coils with oils for two purposes:

1. To effect a higher degree of conversion of the oil when diluted with C_3 and C_4 hydrocarbons than is possible when this oil is cracked by itself.
2. To effect simultaneously a certain amount of cracking with subsequent polymerization and other side reactions of the C_3 and C_4 hydrocarbons and oils.

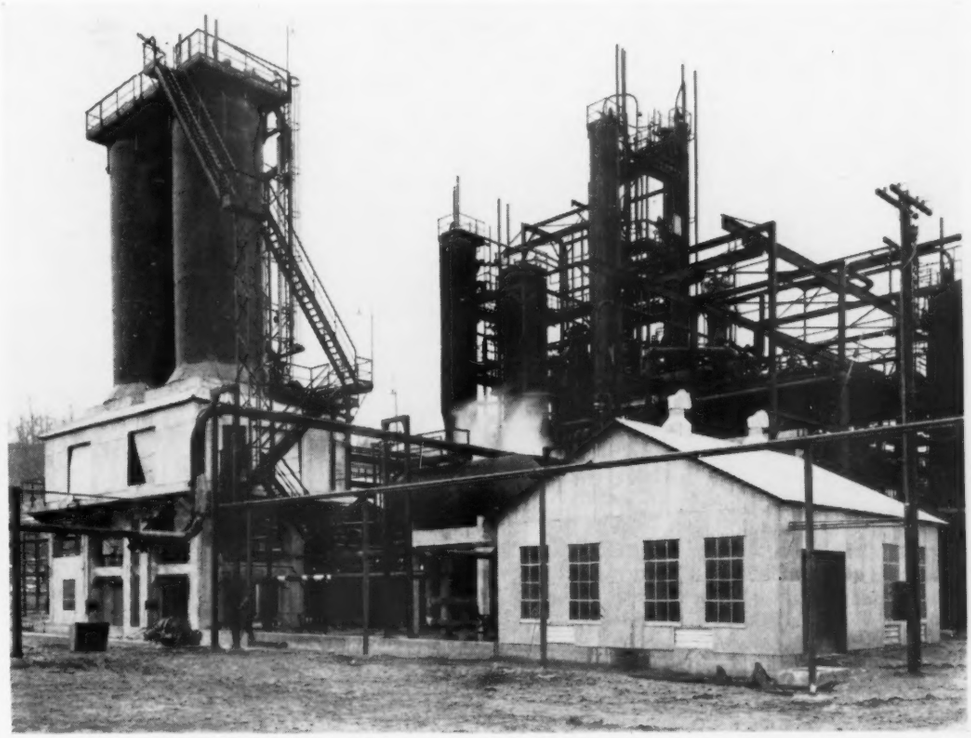
While it is true that there will always be a small amount of cracking of the C_3 and C_4 hydrocarbons in any case, the conversion per pass of these components at temperatures below 950°F. is so small that it may be said that the simultaneous cracking of the oil and polymerization of the C_3 and C_4 hydrocarbons can only be practically effected with oils which can be cracked at temperatures above 950°F. For oils which cannot be cracked at these high temperatures the C_3 and C_4 hydrocarbons are primarily introduced in order to increase the "crack per pass" of the oil, and permit other side reactions. That favorable side reactions take place when polyforming heavier oils is substantiated by the very large volume increase of products over charge, which is of the order of two to three times the volume increase encountered in thermal cracking.

With respect to heavy oils such as reduced crudes, heavy recycle oils, etc., there is a definite minimum percentage of C_3 and C_4 hydrocarbons in the total furnace feed which should be maintained in order to make possible the increase of the "crack per pass" of the oil. The minimum quantity of C_3 and C_4 hydrocarbons in the furnace feed is indicated to be related to the critical temperature of the furnace feed. It has been found that when cracking a mixture of an oil and C_3 and C_4 hydrocarbons at temperatures lower than the critical temperature corresponding to the mixture of the oil and the C_3 and C_4 hydrocarbons this oil cannot be subjected to more severe cracking conditions than if the oil were cracked alone. This is attributed to the following:

When the temperature of an oil in a cracking tube is below the critical temperature of the oil and above its critical pressure there always exists a vapor phase and a liquid phase in the tube. The liquid phase is suspended in the vapor phase as minute oil particles which, due to the turbulence in the tube, are thrown out against the tube walls covering this with a thin oil film composed of the heavier components of the oil.

Tube Wall Film Dissolved

As the heat transmitted through the tube wall to the mixture of vapor and oil in the tube has to be transmitted through the oil film the coking characteristics for this



Naphtha polyform unit and coke drums at Gulf's Cincinnati refinery

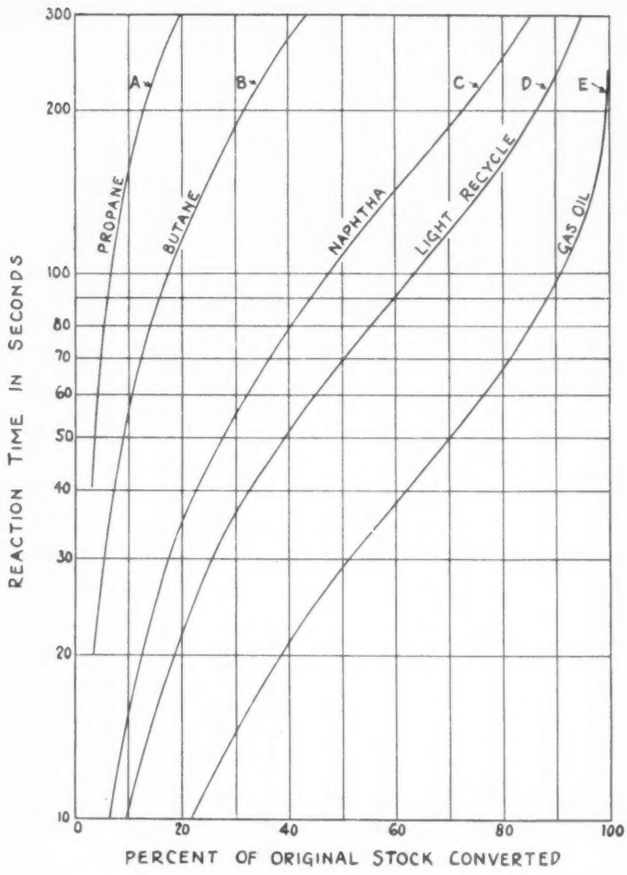


Fig. 1. The relative percentages of conversion of five stocks when cracked at 1020°F. under 1000 psi. pressure

mixture are determined by the coking characteristics for the oil film in the tube. As long as this oil film exists, gas dilution of the oil will not make it possible to crack the oil to a more severe degree than if the oil were there by itself. However, as the percentage of C_3 and C_4 hydrocarbons in the furnace feed is increased we finally reach the point where the critical temperature of this mixture is equal to the temperatures at which the oil can be cracked by itself. At this point only one phase exists, namely, a vapor phase. The oil vapors and the C_3 and C_4 hydrocarbon vapors will hence form a perfect solution and the film on the tube wall will be of the same composition as the main body of hydrocarbon vapors passing through the tube. Before the right percentages of dilution are reached there is no benefit in cracking the heavier oils in a dilution of normal gaseous hydrocarbons.

FROM the above discussion it is evident that there exists an absolute minimum limit for C_3 and C_4 hydrocarbon dilution of a heavy oil in order to effect an increase in the cracking conditions to which this oil can be subjected. On the other hand, there is also a maximum limit for the dilution of any oil with C_3 and C_4 hydrocarbons, in this case determined from the cracking, polymerization, and other side reactions of the C_3 and C_4 hydrocarbons recycled with the oil.

Fig. 1 indicates a plot showing the relative percentage of conversion of propane, butane, virgin straight-run Mid-Continent naphtha and light recycle gas oil when cracked at a temperature of 1020°F. and a pressure of 1000 psi. at different soaking times, expressed in seconds. The temperature of 1020°F. was arbitrarily selected to permit a comparison of these stocks. For naphtha polyforming, 1030°F. to 1130°F. is generally used.

From an inspection of Fig. 1 it will be seen that by subjecting propane and butane and the straight-run naphtha to the same cracking conditions of 1020°F. and 1000 psi. pressure simultaneously with a soaking time of 150 seconds, the naphtha will be subjected to a conversion per pass of 60% while the butane at the same time will be subjected to a conversion per pass of 25% and the propane to a conversion per pass of 10%. If it is desired to reform the naphtha and at the same time crack and polymerize the C_3 and C_4 hydrocarbons it is evident that it will be necessary to maintain a cycle ratio of butane circulating through the heating element to fresh butane introduced to or formed in the system of 4:1 and a cycle ratio of the propanes charged to the furnace over fresh propane introduced to or formed in the system of 10:1.

Likewise, if a less refractory oil as, for instance, virgin gas oil or light recycle stock, is to be cracked, and it is desired at the same time to crack and polymerize C_3 and C_4 hydrocarbons in the same coil it will be seen from Fig. 1 that this will call for higher cycle ratios for the C_3 and C_4 hydrocarbons than if these gases are cracked in the presence of straight run naphtha. For instance, a light recycle stock like the oil represented by Curve D on Fig. 1 can only be cracked to a conversion per pass of approximately 45% in C_3 and C_4 dilution without running into coking troubles.

CRACKING this oil to 45% "crack per pass" at 1020°F. at 1000 psi. will call for a soaking time of 60 seconds. At the same time the butane will be subjected to a conversion per pass of 10% and the propane to a conversion per pass of 4%, calling for cycle ratios between butane charged through the heating element and fresh butane introduced to or formed in the system of 10:1 and the corresponding cycle ratio for the propane of 25:1. These ratios may seem high, but are counterbalanced by the fact that heavier oils, when cracked, produce smaller percentages of total gas and hence also of C_3 and C_4 hydrocarbons than do naphthas, and the right recycle ratio of C_3 and C_4 hydrocarbons to oil furnace feed is usually obtained when the proper dilution for increased crack per pass is maintained.

From the foregoing it may be concluded that an upper limit for the amount of C_3 and C_4 hydrocarbons which should be cycled through the heating coil with a certain oil, when it is desired to completely crack and polymerize the C_3 and C_4 hydrocarbons, can be exactly determined when the cracking characteristics of the oil are known and the amounts of C_3 and C_4 hydrocarbons charged to the system, or formed in the system, are known.

If there is introduced to the system not only an oil feed, but also a certain amount of C_3 and C_4 hydrocarbons from the outside and the conversion characteristics of the oil are known, it is easy to compute the cycle ratio which must be maintained for completely converting the C_3 and C_4 hydrocarbons introduced to the system from an outside source. Generally speaking, the gasoline produced per pass for oils above heavy naphtha boiling range may be increased from 1.5 to 2 times the "crack per pass" obtained in an ordinary thermal cracking unit by employing the polyform principle. Table 1 shows a comparison

TABLE NO. 1

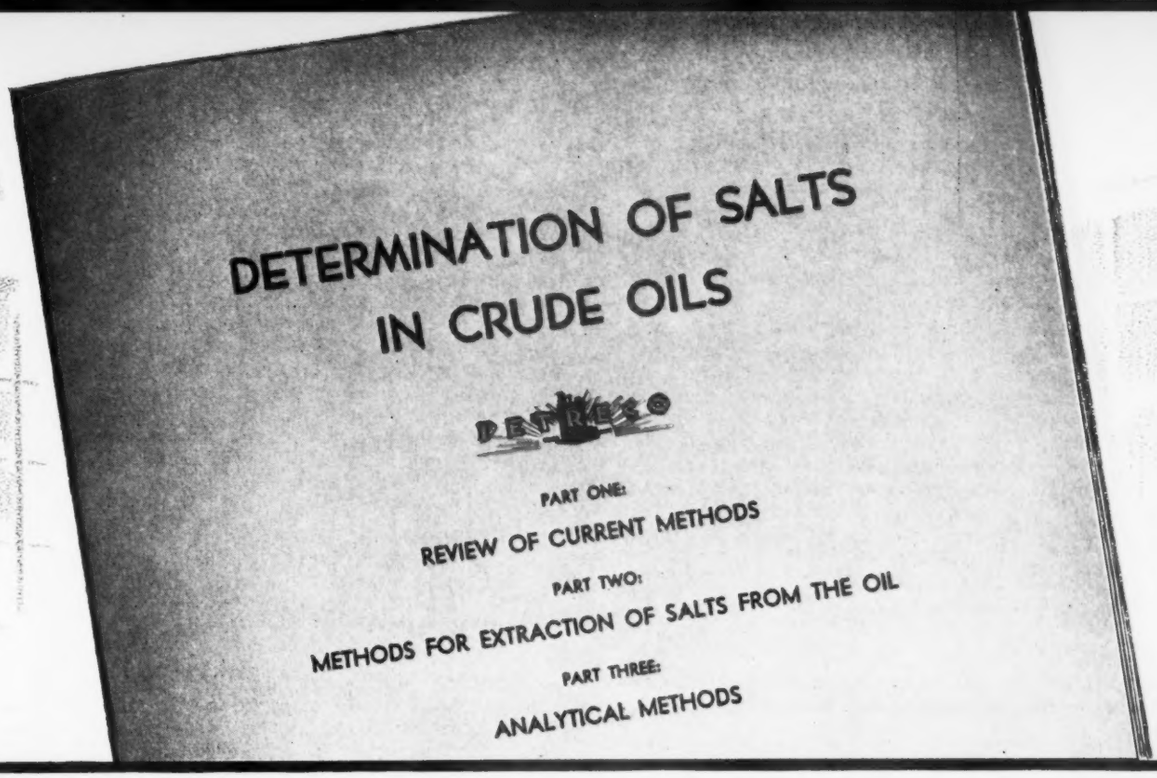
Comparison of Crack per Pass

(400 E. P. Gasoline by Volume)

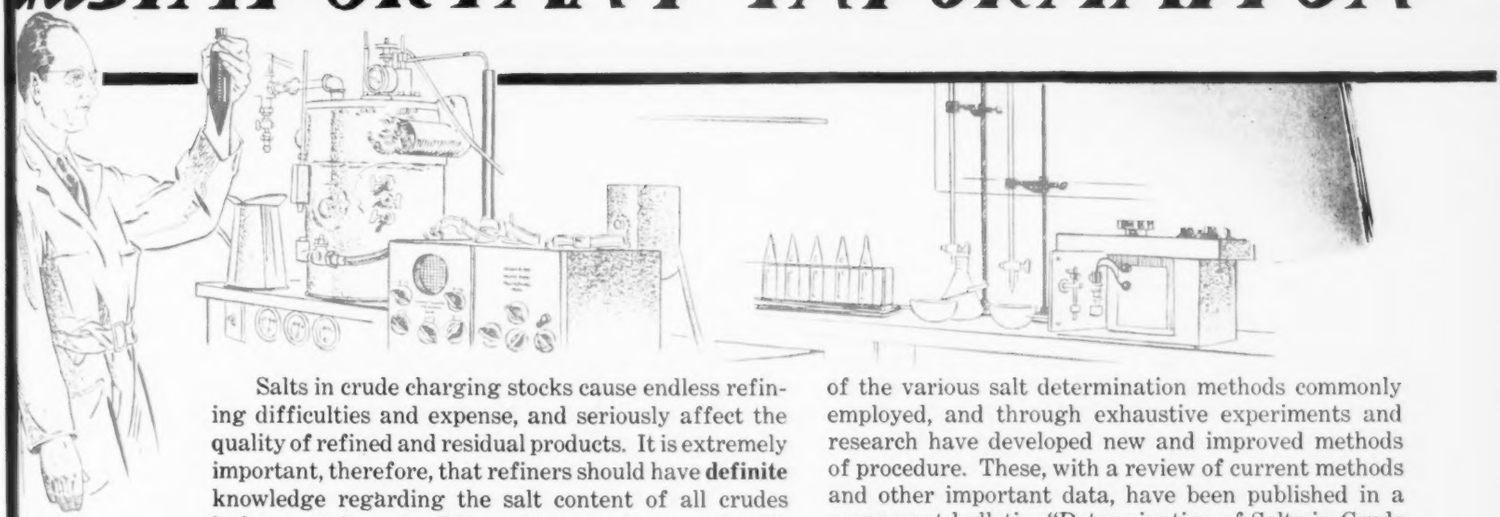
POLYFORM VS. CONVENTIONAL THERMAL CRACKING

Properties	Venezuela Reduced Crude		Mid-Continent P. S. Stock		Venezuela Recycle Stock		Mid-Continent Naphtha	
Gravity: °A.P.I.	19.3		26.0		27.1		50.0	
Assay Distillation								
Over Point: °F.	238		265		250		270	
10% at	496		451		424		302	
50% at	715		626		522		336	
90% at	1015				664		378	
Mol. Weight	284		270		201		125	
Characterization Factor	11.0		11.5		11.1		11.8	
Vol. % Liq. Gas $C_3 + C_4$	None	25	None	53.8	None	44.2	None	49.2
Cracking Temp. °F.	840	890	900	985	950	1000	1000	1030
Pressure psi. ga.	500	600	200	750	500	1000	1100	1100
Max. % Gasoline/Pass	9.0	15	18	41.3	16.3	30.5	70.1	77.2
Octane No. Gasoline	64.0	68.0	65.0	70.0	72.0	78.0	71.7	75.1

This data from commercial units with 2000-hour average length runs.



EVERY REFINERY SHOULD HAVE *this IMPORTANT INFORMATION*



Salts in crude charging stocks cause endless refining difficulties and expense, and seriously affect the quality of refined and residual products. It is extremely important, therefore, that refiners should have **definite** knowledge regarding the salt content of all crudes before running. As different type crudes require different techniques for determining salt content, it is equally important that dependable methods of salt determination be utilized.

Petreco technicians have made an intensive study of the various salt determination methods commonly employed, and through exhaustive experiments and research have developed new and improved methods of procedure. These, with a review of current methods and other important data, have been published in a permanent bulletin, "Determination of Salts in Crude Oils," which every refiner should have immediately available. It will prove invaluable in combatting salt troubles such as corrosion, plugging, scaling, coke formation, and products of inferior quality. Copies will be supplied to any refinery executive gratis, on request.

Eliminate The Trouble By Removing The Cause

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PETRECO

DE-SALTING DEHYDRATING

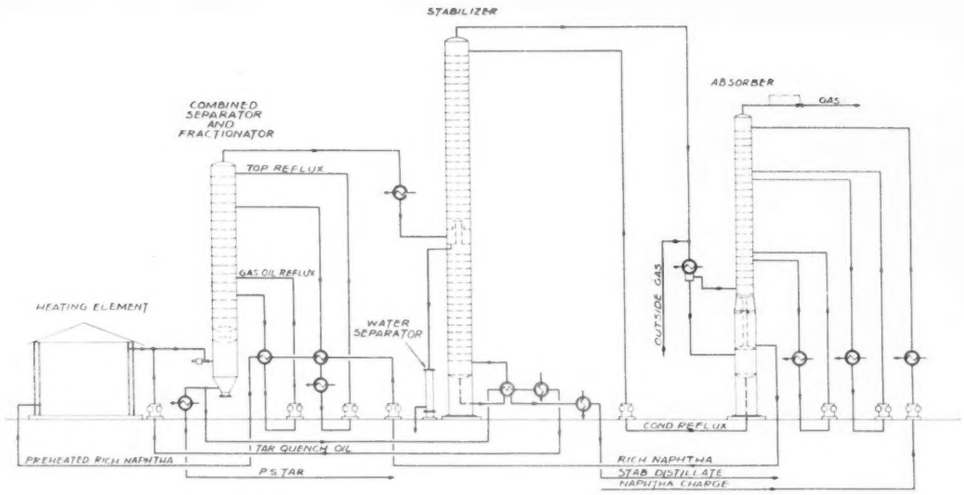


Fig. 2. The simplest type of a once-through polyform unit is particularly adapted to naphthas, kerosine, and light furnace oil, with simultaneous polymerization of C_3 and C_4 hydrocarbons

between conversion per pass with ordinary thermal cracking and with the Polyform process.

Several Types of Naptha Units

To illustrate the flexibility of the Polyform process, the following descriptions of different types of units now in service are given with simplified flow diagram and typical yields. Fig. 2 shows the simplest type of a once-through unit. This type of unit is particularly adapted for naphthas, kerosine, and light furnace oil, with simultaneous polymerization of C_3 and C_4 hydrocarbons from other cracking units. The unit consists of the same elements in any ordinary type of cracking unit, such as heater, separating and fractionating tower, stabilizer, and absorber.

The cold naphtha charge is used for absorption oil in the absorber, which is equipped with sidestream coolers for removal of heat of absorption for full control of absorption, and to give desired gas circulation. The rich oil from the absorber constitutes the furnace charge. A second absorber, not shown on flow sheet, may be added using light gas oil reflux for absorption oil to extract the C_3 and C_4 hydrocarbons from outside gases charged to the unit. The second absorber is only necessary when outside gas feed contains large percentages of hydrocarbons lighter than propane, and it is not desired to boost the outside gases to the pressure in the naphtha absorber, as the gas oil absorber may be operated at lower pressures. Ordinarily outside gases can be discharged directly into the naphtha absorber if in liquid phase or into vapor line between stabilizer and pre-condenser if in vapor phase.

Recirculated bottoms from the combined separating and fractionating tower is used for quench oil to the tube outlet ahead of the reducing valve in order to avoid coke formation in the transfer line and separating tower. The excess heat in the tar quench oil is usually sufficient for satisfactory reboiling of the distillate in the stabilizer. The combined naphtha and absorbed gas furnace charge is preheated to approximately 500°F. to 550°F. in trap tray and gas oil sidestream high pressure heat exchangers before entering the furnace. The furnace is usually designed with two chambers, one bringing up section and one soaking section, to permit full control of polyform reactions.

Typical operating conditions for this type of unit are:

Back pressure on heating element	1000-1500 psi.
Tower pressure	300- 400 psi.
Outlet temperature from heater	1020-1125°F.

Table 2 shows yields and inspections of the charge and products from naphtha polyforming without outside gas charge of (1) Eastern Venezuela naphtha 10% of crude, (2) West Texas straight run gasoline 25% of crude, and (3) a 50-50 mixture of Pennsylvania and Mid-Continent naphthas. In this table are also given the yields and inspection of the charge and products from two units installed at Gulf's Pittsburgh and Cincinnati plants, charging, in addition to Mid-Continent naphtha, all of the gases from the balance of the refinery. These units are equipped with gas oil absorbers operating at approximately 225 psi. pressure for the absorption of C_3 and C_4 hydrocarbons from the refinery gases. The gas oil is a sidestream reflux from the fractionating tower and the rich gas oil is refluxed back to the fractionating tower, in this manner introducing the C_3 and C_4 hydrocarbons in the outside gas to the units.

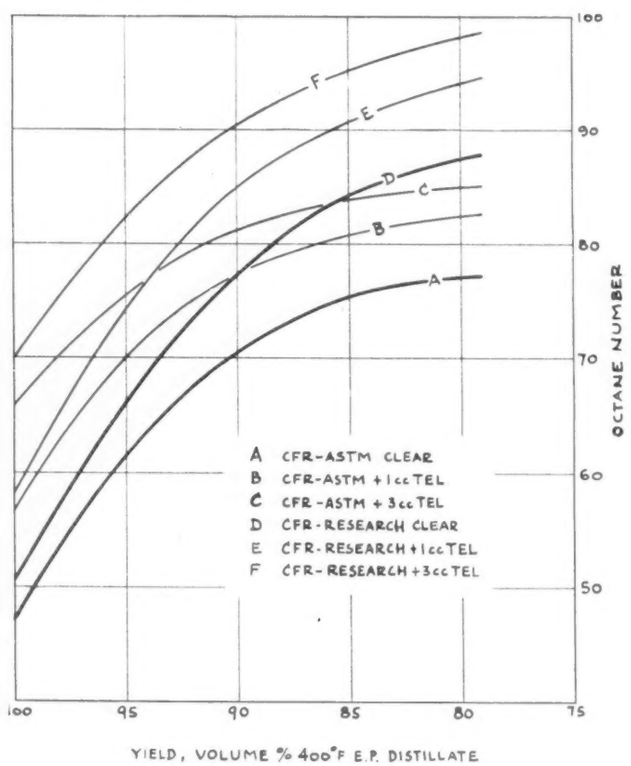


Fig. 3. Yield-octane relationships for polyformed eastern Venezuela naphtha show the tetraethyl lead response

Yield Octane Relationships

Figures 3 and 5 give complete yield-octane relationship for Eastern Venezuela naphtha and the West Texas straight run gasoline for which inspections are given in Table 2. Curves showing TEL response with 1 cc. and 3 cc. of TEL per gallon of distillate are indicated on these plots.

Fig. 4 contains plots showing volume per cent yield of blends, clear, +1 cc. TEL per gallon, and + 3 cc. TEL per gallon of clay treated distillate and straight run Venezuela

gasolines at various degrees of polyforming the naphthas. The yields are indicated in per cent of the 28.5% on the crude straight run Eastern Venezuela gasoline with properties as shown in Table 3. This gasoline was reduced by removing 5%, 10%, and 15% on crude of naphtha cuts with properties as shown on Table 3, which also shows inspections on the 23.5%, 18.5%, and 13.5% on crude of light gasoline cuts remaining after removal of the naphtha cuts. The naphtha cuts were polyformed to different octane numbers and blends prepared from the various polyformed distillates with corresponding straight run gasolines. Fig. 4 is useful in working up economic balances to determine the most economical percentage of naphtha to polyform; it also shows clearly the large TEL saving which may be obtained by the process at the expense of small reductions in total yield of gasoline.

There are at present three units of this type in service which also provide for polymerizing all residue gases from the balance of the refinery. Two units are under construction. Two of the existing units are equipped with coking drums, into which the efflux from the furnaces is discharged. The stock to be coked, reduced crude or pressure still tar from other units, is introduced as quench oil to the transfer line at the furnace outlet. The tar is coked by means of waste heat in the furnace discharge. Reduced crude or tar of any gravity can be coked in this manner, or any heavy slop oil from the refinery can be converted to gasoline, coke, and clean pressure still charging stock.

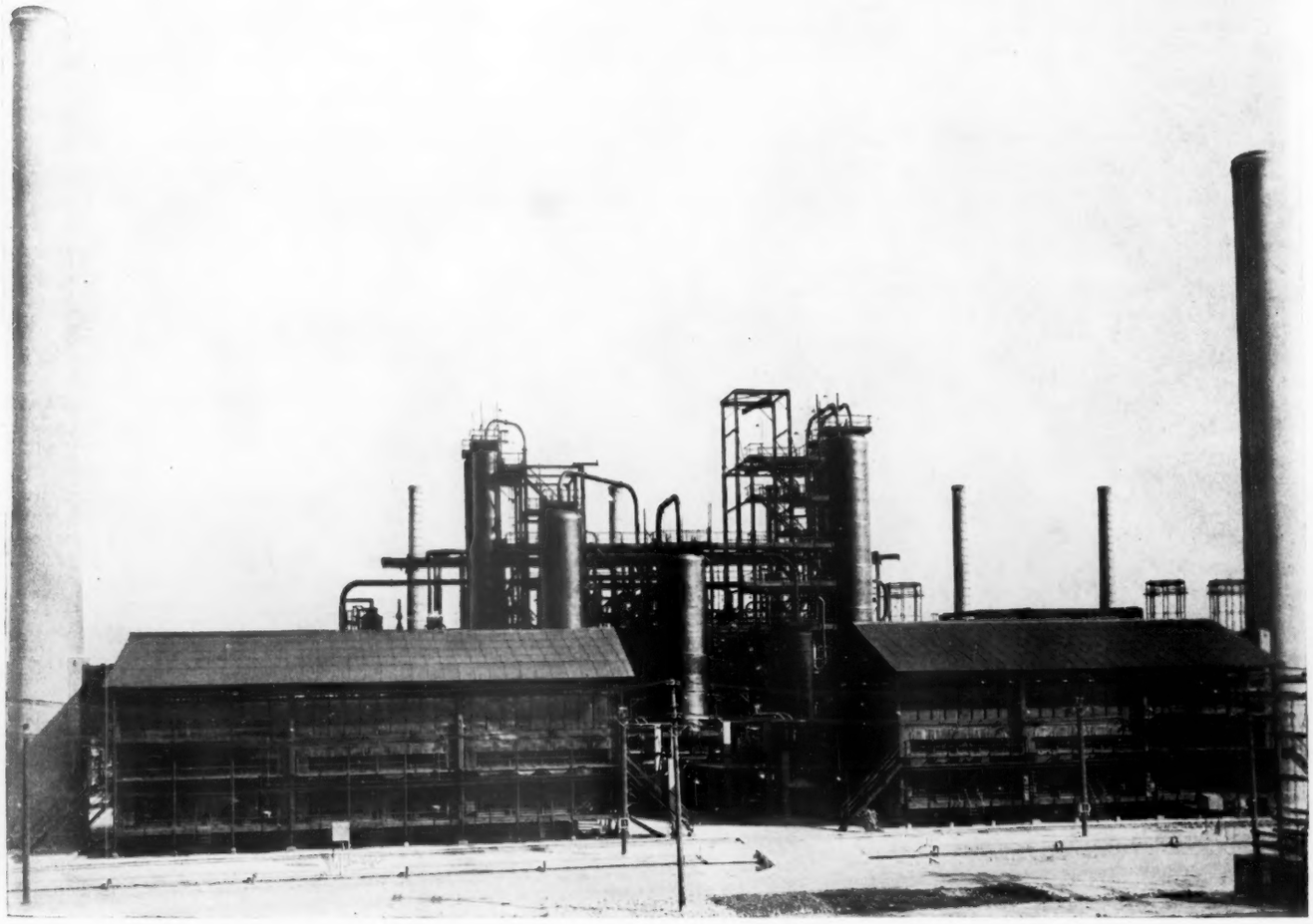
Typical yields from polyform coking different heavy charging stocks are shown in Table 4. The operations indicated in Table 4 were conducted to produce, in addition to gasoline and coke from the heavy stocks, a pressure still charging stock of approximately 750° F. end point suitable for cracking in ordinary thermal gas oil cracking units. This type of coking is cheap as the only added operating expense is the cost of cleaning coke drums, and the

TABLE NO. 2

Polyform Operations With and Without Outside Gas Charge Yields and Products from Naphtha

	Naphtha Polyforming			Naphtha Polyforming With Outside Gas Feed Charging	
	Eastern Venezuela Naphtha 18.6-28.5% On Crude	West Texas Straight Run Gasoline 25% On Crude	50-50 Mix MC & Pa. Naphtha 24-34% On Crude	50-50 Mix MC & Pa. Naphtha 24-34% On Crude	MC Naphtha 20-32% On Crude
YIELD DATA—VOLUME PERCENT OF NAPHTHA					
Charge					
Naphtha	100.0	100.0	100.0	100.0	100.0
Outside Gas Feed, F.O.E.	.....	.....	.....	57.4	83.8
Total Charge	100.0	100.0	100.0	157.4	183.8
Products					
Residue Gas, F.O.E.	9.0	14.3	15.1	59.0	80.7
Cracked Distillate	83.9	80.1	77.2	96.7	95.3
Residuum	7.4	2.6	7.8	9.7	9.2
Total Products	100.3	97.0	100.1	165.4	185.2
Outside Gas Feed, CF/B Chg.	None	None	None	2090	2820
Residue Gas, CF/B Chg.	506	728	651	2565	3200
LABORATORY INSPECTION					
Naphtha					
Gravity: °A.P.I.	47.9	58.2	50.8	49.2	50.2
Aniline Point: °F.	136	132	141	.....	137
Sulfur, L: %	0.03	0.22	0.06	.....	0.04
Distillation, A.S.T.M.					
Over Point: °F.	266	96	206	219	156
End Point: °F.	431	415	433	451	494
10% at: °F.	290	170	300	290	244
50	311	266	345	342	345
90	372	374	395	412	439
Octane No.: CFR-ASTM, Clear	47.3	48.5	33.0	33.2	33.1
Stabilized Distillate					
Gravity: °A.P.I.	52.0	57.8	56.7	56.0	59.2
Acid Heat: °F.	89	95	113	103	100
Aniline Point: °F.	71	81	70	83	91
Sulfur, L: %	0.01	0.05	.....	.....	.....
Vapor Pres., 100° F.: Fsi.	8.2	9.7	11.5	10.1	11.1
Distillation, A.S.T.M.					
Over Point: °F.	100	93	95	86	86
End Point: °F.	404	410	412	424	420
10% at: °F.	152	122	120	119	120
50	282	211	264	241	225
90	349	337	368	378	372
Octane No.: CFR-ASTM, Clear	76.1	75.9	75.1	76	76.5
Octane No.: CFR-Research, Clear	86.4	86.9	87.1	86.5	87.0
Residuum					
Gravity: °A.P.I.	22.9	4.2	10.5	12.7	7.4
Viscosity, S.U.V.: 100° F.	41	8140	75	75	3008
Sulfur, B: %	0.13	0.16	.....	.....	0.1
Water and Sediment: %	0.2	0.1	0.2	0.1	0.1
Outside Gas Feed					
Podbielniak Analysis: Mol. %					
Hydrogen	.....	.....	.....	2.5	2.5
Methane	.....	.....	.....	37.4	34.9
Ethane	.....	.....	.....	20.4	18.8
Ethene	.....	.....	.....	2.2	3.5
Propane	.....	.....	.....	18.6	18.9
Propene	.....	.....	.....	7.5	8.5
Butanes	.....	.....	.....	5.0	6.7
Butenes	.....	.....	.....	4.0	4.8
Pentanes	.....	.....	.....	1.7	1.1
Hexanes and Heavier	.....	.....	.....	.....	0.3
Hydrogen Sulfide: Mol. %	.....	.....	.....	0.2	0.3
Total Unsaturates: Mol. %	.....	.....	.....	14.4	17.2
Specific Gravity, Air = 1.0	.....	.....	.....	1.077	1.120
Residue Gas					
Podbielniak Analysis: Mol. %					
Hydrogen	7.0	6.8	16.9	7.0	7.0
Methane	54.7	53.0	34.1	41.9	39.9
Ethane	25.6	26.4	26.7	23.9	24.2
Ethene	9.7	8.6	5.0	3.5	4.8
Propane	2.0	1.8	13.5	17.2	17.4
Propene	1.0	0.5	3.8	5.1	4.9
Butanes	.....	2.4	.....	0.9	1.0
Butenes	.....	.....	.....	0.5	0.8
Hydrogen Sulfide: Mol. %	.....	0.5	.....	0.2	0.3
Total Unsaturates: Mol. %	10.7	9.1	8.8	9.1	10.5
Specific Gravity, Air = 1.0	0.700	0.770	0.86	0.906	0.935

THE POLYFORM AND



Large polyform or gas reversion full crude cracking plant. Now under construction by Lummus are two naphtha polyform plants to produce, respectively, 10,000 and 4,000 barrels per operating day of very high octane gasoline from heavy naphtha and outside propanes and butanes.

LUMMUS

Gas Reversion PROCESSES

produce:

— gasoline with good distillation characteristics, good color, gum and oxidation stability; same high octane throughout entire boiling range.

— research octane of from 85 to 95.

— a spread between the CFR-ASTM and research octane of from 9 to 14 numbers—and between CFR-ASTM and road octane of 3 to 8 numbers, depending on feed stock and operation.

— high blending value and good lead susceptibility.

— high overall yields.

— aviation gasoline base stock.

— toluene, benzol, xylene.

The polyform and gas reversion processes offered by Lummus, operating under patents of the Phillips Petroleum Company and Gulf Oil Corporation, have had over four years refinery production on large scale units. Ten polyform and gas reversion plants are in operation. The processes make possible the production of high octane gasoline with low specific gravity fuel gas from *all* cracking stocks. When applied to gas oils or reduced crudes, conversions per pass approximately double those obtained by conventional cracking are possible. Full crudes may be selectively cracked. Non-residuum full coking operations may be obtained if desired.

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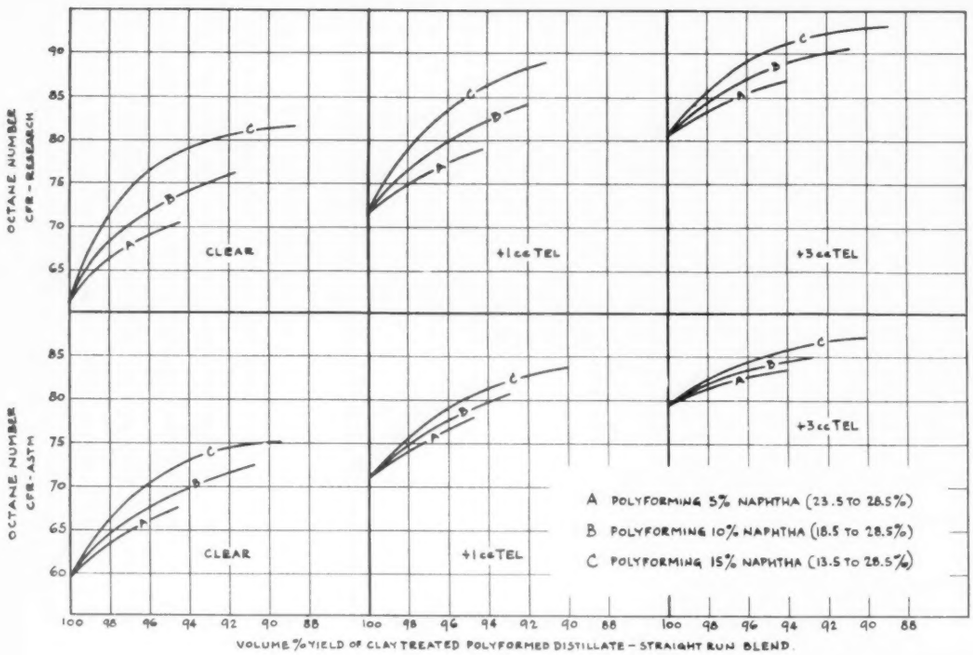
OCTANE NUMBER CFR - RESEARCH
OCTANE NUMBER CFR - ASTM
CLEAR
+1cc TEL
+3cc TEL
A POLYFORMING 5% NAPHTHA (23.5 TO 28.5%)
B POLYFORMING 10% NAPHTHA (18.5 TO 28.5%)
C POLYFORMING 15% NAPHTHA (13.5 TO 28.5%)
VOLUME % YIELD OF CLAY TREATED POLYFORMED DISTILLATE - STRAIGHT RUN BLEND

Fig. 4. Yield-octane relationships of blends of varying percentages of undercut straight-run gasoline with clay treated polyformed Venezuelan naphtha show the volume per cent yields of blends, leaded and unleaded, for various degrees of polyforming the naphtha

overhead charges on coke drum installation. There are distinct advantages in coking a tar, low in hydrogen, in gas dilution, because of the low percentage of coke produced.

A two-coil combination crude polyform unit flow is shown in Fig. 6. In a unit of this type, when there is no straight-run naphtha included in the charge, the next refractory stock, light recycle oil, is used for absorption oil in the absorber. The general flow, Fig. 6, is as follows. Crude is preheated in exchangers and flashed into a topping tower, from which the desired straight-run products are removed. The hot reduced crude is charged direct to the vis-breaker furnace together with a heavy recycle side-stream from the separator. C_3 and C_4 condensate from condensation of stabilizer overhead is pumped through high pressure exchangers into the vis-breaker furnace charge. The clean recycle stock from the base of the fractionating tower reboils the distillate in the stabilizer, preheats the rich recycle furnace charge, and is then cooled and pumped to the top of the absorber as absorption oil. The rich light recycle stream is pumped from the base of the absorber through high pressure heat exchangers to the recycle polyform coil.

In a unit of this type very little cracking and polymerization of gases takes place in the vis-breaker coil. Practically all gas cracking and polymerization occurs in the recycle coil. Typical operating pressures and temperatures applied in vis-breaking heavy reduced crudes are listed below:

Back pressure of vis-breaker coil...	400- 600 psi.
Back pressure of recycle coil.....	1000-1200 psi.
Tower pressure.....	300- 400 psi.
Outlet temp. of vis-breaker coil.....	900- 930°F.
Outlet temp. of recycle coil.....	1000-1010°F.

By adding coke drums between the vis-breaker furnace and the separating tower the vis-breaker charge may be once-through coked with a marked increase in polyformed gasoline yield. Table 5 shows yields from vis-breaking of 17.9° A. P. I. Venezuela crude and vis-breaking of 34.3° A. P. I. gravity West Texas crude.

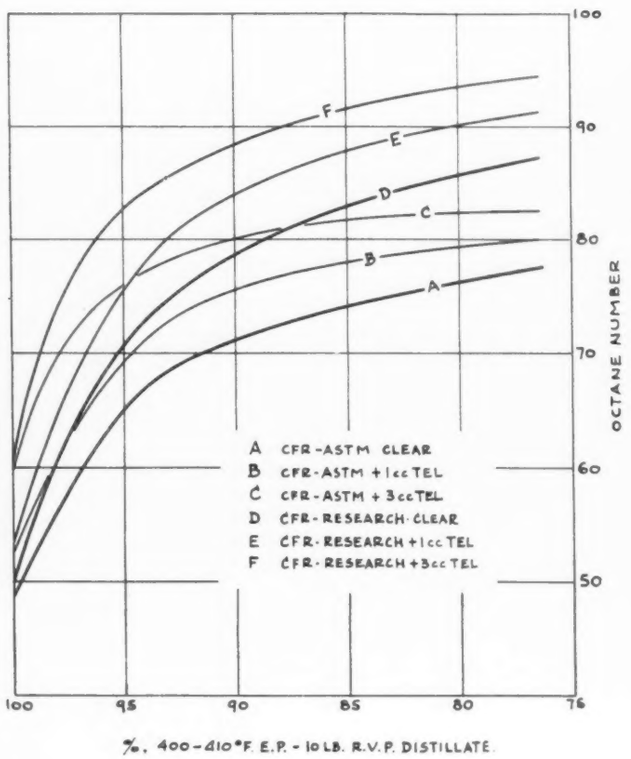
OCTANE NUMBER
A CFR-ASTM CLEAR
B CFR-ASTM +1cc TEL
C CFR-ASTM +3cc TEL
D CFR-RESEARCH CLEAR
E CFR-RESEARCH +1cc TEL
F CFR-RESEARCH +3cc TEL
%, 400-410°F. E.P. - 10 LB. R.V.P. DISTILLATE

Fig. 5. Yield-octane relationships for polyformed West Texas straight-run gasoline

Four-Coil Combination Crude Unit

Fig. 7 is a simplified flow sheet of a 22,000-barrel crude topping and polyform unit at the Gulf's Port Arthur plant. The only products from this unit are stabilized straight run gasoline, stabilized polyformed distillate, Bunker "C" fuel oil and dry gas of 0.78 to 0.84 specific gravity. In

TABLE NO. 3

Properties of Various Percentages of Straight Run Gasolines & Naphthas From Eastern Venezuela Crude

	Total Gaso.	St. Run Gaso.	Naphtha 23.5 to	St. Run Gaso.	Naphtha 18.5 to	St. Run Gaso.	Naphtha 13.5 to
Percentage On Crude	**28.5**	**23.5**	**28.5**	**18.5**	**28.5**	**13.5**	**28.5**
Gravity: °A.P.I.	60.5	64.6	45.7	68.5	47.9	72.8	50.8
Vapor Pressure at 100° F.	9.6	....	....	....	....	15.2	....
Aniline Point: °F.	120	121	126	124	136	127	116
Acid Heat: °F.	3	4	3	5	2	7	2
Sulfur: %	0.01	0.01	0.05	0.01	0.03	0.01	0.01
A.S.T.M. Distillation							
Over Point: °F.	101	94	318	90	266	85	230
End Point: °F.	412	298	465	270	431	248	412
10% at: °F.	158	136	329	128	290	119	258
50% at: °F.	240	205	349	185	311	172	286
90% at: °F.	342	270	409	242	372	213	358
Octane Number, CFR-ASTM	59.9	64.3	40.9	67.0	47.3	71.1	49.7

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TABLE NO. 4

Yield Data from Coking Section of Polyform Coking Unit

YIELD DATA	1	2	3	4	5
Charge—Volume Percent of Total Charge					
Residuum from Vis-Breaking & Clean Oil Cracking	92.3	....	....	....	....
Residuum from Black and Clean Oil Cracking	....	88.6	....	....	....
Reduced Mid-Continent Crude	....	....	92.3	94.5	....
"A" Grade Asphalt from Mid-Continent Crude	....	....	....	....	91.7
Residuum from Naphtha Polyform Operation	7.7	11.4	7.7	5.5	8.3
Total Heavy Oil Charge to Coking Section	100.0	100.0	100.0	100.0	100.0
Products—Volume Percent of Total Crude					
Residue Gas	15.8	22.3	14.3	10.4	14.5
Polyformed Distillate	16.5	15.7	28.6	27.2	22.0
Gas Oil	41.5	28.6	45.0	50.3	44.8
Coke (400 Lbs./Bbl.)	29.1	33.0	15.6	15.4	22.4
Total Products	102.9	99.6	103.4	103.3	103.7
LABORATORY INSPECTION					
Outside Heavy Oil Charge					
Gravity: °A.P.I.	10.2	9.9	21.8	22.0	16.1
Viscosity, SUV at: 100° F.	2,294	1,367	1,361	1,232	..
Viscosity, SUV at: 210° F.	101	....	....	....	689
Pour: °F.	+20	+20	+40	+65	+60
Water & Sediment: %	0.4	0.1	0.2	0.1	0.1
Conradson Carbon Residue: %	11.3	8.6	4.6	4.6	8.4
Gas Oil Produced					
Gravity: °A.P.I.	17.8	14.3	25.7	27.1	24.5
Pour: °F.	+20	+30	+35	+50	+40
Conradson Carbon Residue: %	0.09	0.15	0.08	0.08	0.18
Aniline Point: °F.	82	60	135	143	121
Distillation, A.S.T.M.					
Over Point: °F.	466	452	458	440	435
10% at: °F.	508	522	521	513	498
50% at: °F.	587	598	616	618	604
70% at: °F.	671	640	661	666	668
Coke					
VCM: %	10.8	9.7	13.1	9.0	10.8

one unit it replaces the conventional type of combination units, thermal or catalytic polymerization unit, gas compression and absorption plant, crude and pressure still distillate stabilization plants.

The general flow is as follows. Crude is charged through heat exchangers into the high pressure crude flash tower from the top of which unstabilized straight run gasoline is removed. The straight run gasoline is stabilized in the stabilizer section of the crude flash tower and from here is passed to running tanks. The No. 1 reduced crude is pumped through a crude heating coil into the atmospheric tower from the top of which a straight-run naphtha cut is removed, condensed, and pumped as absorbption medium to the top of the absorber. From the atmospheric topping tower a furnace oil or kerosine sidestream can be removed, if required. Below the furnace oil drawoff a virgin gas oil cut is removed. This virgin gas oil cut of 1.0-5 NPA color and approximately 700° F. end point is charged hot to the virgin gas oil coil with its allocated C_3 and C_4 diluent. In this coil the gas oil is polyformed once-through to between 35-45% gasoline production per pass.

From the bottom of the atmospheric tower the No. 2 heavy reduced crude is charged hot through the vis-breaker coil together with the heavy tar stripper sidestream and required C_3 and C_4 diluent. A conversion per pass of approximately 14% to 16% is obtained in this coil. The light recycle stock from the base of the fractionating tower of approximately 1.5 NPA color and 700 end point is likewise charged hot to the recycle polyform oil with the proper C_3 and C_4 dilution. The light recycle stock is subjected to a conversion per pass (gasoline produced) of approximately 25% to 32%. The C_3 and C_4 diluent for these three coils is all furnished as condensate from stabilizer over-

TABLE NO. 5

Yields & Products from Polyform Operation on Crude Oils

Charge	Heavy Venez. Crude Heavy Fuel Oil	West Texas Crude Light Fuel Oil	West Texas Crude Bunker C Fuel Oil
Running For			
Thruput, B/Stream Day	5,000	5,000	22,000
Type Unit	Polyform	Polyform	Polyform
Polyform Coils:			
Reduced Crude	1	1	1
Recycle	1	1	1
Virgin Gas Oil	....	....	1
Naphtha	....	....	1
Yield Data: Vol. % of Crude			
Gas, F.O.E.	4.9	3.9	11.5
St. Run Gasoline	8.8	29.6	13.1
Furnace Oil	2.2	4.2	0.6
Stabilized Polyformed Dist.	32.7	29.8	50.4
Fuel Oil	54.6	32.0	27.4
Total	103.2	99.5	103.0
Gas: CF/B Crude	239	192	420
Gas: CF/B Polyformed Dist.	733	644	835
Laboratory Inspections			
Crude			
Gravity: °API	17.9	34.3	34.4
Viscosity, SUV at 100° F.	1026	45	43
Sulfur, P: %	1.92	1.50	1.57
Water & Sediment: %	0.5	0.1	0.2
Distillation			
Over Point: °F.	198	124	130
% at 392° F.	8	31	30
% at 700° F.	65	76	..
10% at: °F.	431	240	235
50% at: °F.	682	554	560
Stabilized Distillate			
Gravity: °API	55.5	58.0	56.7
Sulfur, L: %	0.39	0.44	0.24
Acid Heat: °F.	112	114	121
Aniline Point: °F.	88	88	..
Octane No., CFR-ASTM	74.9	74.8	73.3
Vapor Press., 100° F.: PSI	11.2	9.5	9.6
Distillation			
Over Point: °F.	82	88	95
End Point: °F.	422	422	418
10% at: °F.	132	127	136
50% at: °F.	269	253	242
90% at: °F.	392	382	372
Fuel Oil			
Gravity: °API	5.1	12.0	7.1
Viscosity, Furol at 122° F.	1546	84	215
Sulfur, B: %	2.9	2.0	2.06
Water & Sediment: %	0.1	0.2	0.5
Pour: °F.	55	20	35
Residue Gas			
Sp. Gr. (Air = 1.0)	0.819	0.837	0.838
Podbielniak Analysis			
Methane & Hydrogen: Mol. %	55.9	54.2	51.4
Ethane & Ethylene	32.8	33.4	34.3
Propane & Propylene	10.2	11.3	13.0
Butanes & Heavier	1.1	1.1	1.3
Total Unsaturates	6.4	5.6	5.4

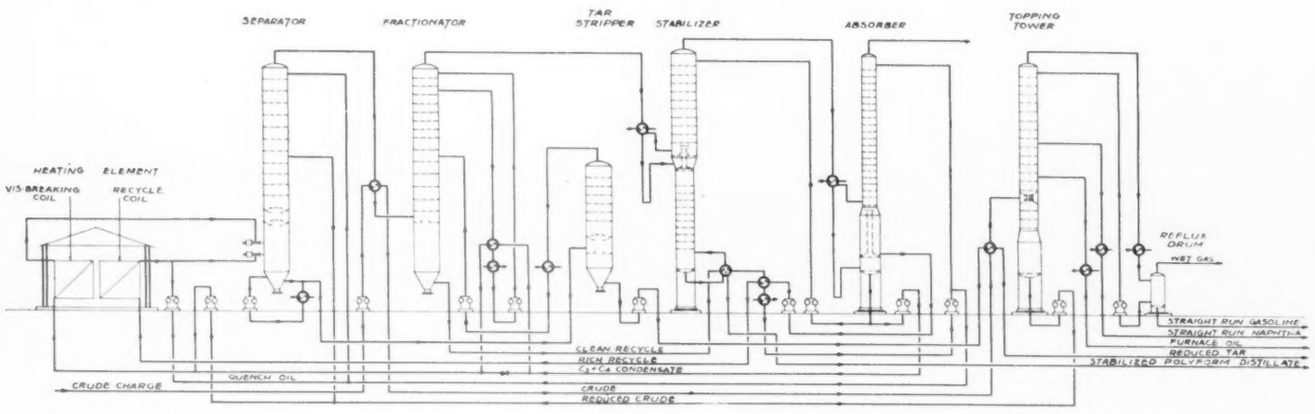

Fig. 6. In a two-coil combination crude polyform unit, when there is no straight-run naphtha in the charge, the next refractory stock, light recycle oil, is used for absorption oil

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TABLE NO. 6

Comparison of C.F.R.-A.S.T.M., C.F.R.-Research, & C.F.R.-Uniontown 1937 Road Octane Numbers of Polyform Gasolines & Straight Run Gasoline Blends

Description Of Gasoline	Octane Number C.F.R. A.S.T.M.	Octane Number C.F.R. Research	Research Minus A.S.T.M.	C.F.R.-Uniontown—1937 Road Octane Number Chevrolet	Ford	Plymouth	Avg.	Road Minus ASTM
Naphtha Polyform	75.1	85.0	+ 9.9	79.7	79.1	78.8	79.2	+4.1
Naphtha Polyform with Outside Gases	76.1	87.2	+11.1	82.3	....	....	....	+6.3
Mixture-48% Pa. St. Run + 52% Naph. Poly...	70.0	74.5	+ 4.5	....	....	....	72.0	+2.0
West Texas Polyform	73.6	84.2	+10.6	77.0	77.3	77.2	77.2	+3.6
Mixture of West Texas St. Run & West Texas Polyform	70.8	73.6	+ 3.1	75.0	74.3	74.8	74.7	+4.2

head and is composed of approximately 25% butanes and 75% propanes. Rich naphtha from the base of the absorber passes through the naphtha polyform coil. Both the C_3 and C_4 condensate diluent and the rich naphtha are preheated in high pressure heat exchangers to between 550° F. to 620° F. before being charged to cracking coils. All four coils discharge into one common separating tower, where the tar is reduced to 10° to 12° A. P. I. gravity without any difficulty. The tar is reduced later with steam in the atmospheric tar stripper to any desired gravity, such as 2° A. P. I.

The type of pyrolytic conversion in this unit is truly selective. All virgin stocks are once-through polyformed before entering the tower system. For this reason the recycle stock is a real recycle oil, highly refractory, with aniline point of 30 to 35, as compared with 150 for virgin

TABLE NO. 7

Blending Value of 76.5 C.F.R.-A.S.T.M. Octane No. Polyform Distillate in A5 Reference Fuel

Blend No.	1	2	3	4	5
Percent Polyform Distillate in Blend	5	15	25	50	75
Percent A5 Reference Fuel in Blend	95	85	75	50	25
CFR-ASTM Octane No. of Blend	43.5	48.1	52.6	62.1	70.0
Calculated CFR-ASTM Octane No. Blending Value of Polyform Dist.	102.0	92.0	89.2	83.8	79.8

Blending Value of 76.5 C.F.R.-A.S.T.M. Octane No. Polyform Distillate in 51.5° A.P.I. Mid-Continent Naphtha

Blend No.	1	2	3	4	5	6
Percent Polyform Dist. in Blend	5	10	20	30	40	50
Percent 51.5 °A.P.I. M. C. Naphtha in Blend	95	90	80	70	60	50
CFR-ASTM Oct. No. of Blend	39.7	42.3	48.9	52.0	56.9	61.9
Calculated CFR-ASTM Octane No. Blending Value of Polyform Dist.	110	109	100	89	88	87

TABLE NO. 8

Properties of Clay Treated & Acid Treated Polyform Gasolines

Polyform Gasoline From	M. C. NAPHTHA Raw Dist.	M. C. NAPHTHA Clay Treated	WEST TEXAS CRUDE Raw Dist.	Caustic Washed, Acid Treated, Doctor Sweetened Distillate Of Various End Points From Raw Distillate 300 E.P.	325 E.P.	350 E.P.	375 E.P.	400 E.P.
Yield: % of Charge	100	97	100	58.1	65.1	77.2	84.5	90.6
Gravity: °A.P.I.	58.4	59.8	56.7	68.1	65.3	61.3	60.3	57.9
Color: Saybolt	...	+30	+ 6	+30	+30	+30	+27	+25
: N. P. A.	1.0	...	...	...	...	...	...	...
Doctor Test	Bad	Poor	Bad	Good	Good	Good	Good	Good
Sulfur: L %	.05	.03	.24	.05	.07	.08	.09	.10
Cu. Dish Gum: Mg/100 CC	118	9	...	...	...	...	...	...
Preformed Gum: Mg/100 CC	4	4	17	1	2	3	3	3
Oxygen Gum: Mg/100 CC	...	...	...	67	55	181	44	140
Oxygen Stab. Min/210°F.	+45	+30	195	45	75	30	75	135
Acid Heat: °F.	120	98	121	146	142	132	134	116
Aniline Point: °F.	85	92	...	...	...	...	...	...
Octane No. C.F.R.-A.S.T.M.	75.8	76.5	73.3	75.9	75.4	74.8	73.8	73.2
L-3	79.8	80.1	...	77.9	77.0	76.6	75.8	75.3
Reid V.P. at 100° F.: psi.	10.9	11.4	9.6	12.9	11.7	10.9	10.1	9.8
Distillation:								
Over Point: °F.	88	82	95	94	96	98	100	100
End Point: °F.	416	415	418	302	326	348	375	395
10% at	122	119	136	118	124	130	136	139
50% at	226	224	242	184	196	216	230	240
90% at	374	372	372	260	282	308	334	351
Recovery: %	96	96	97	96	96	97	97	97

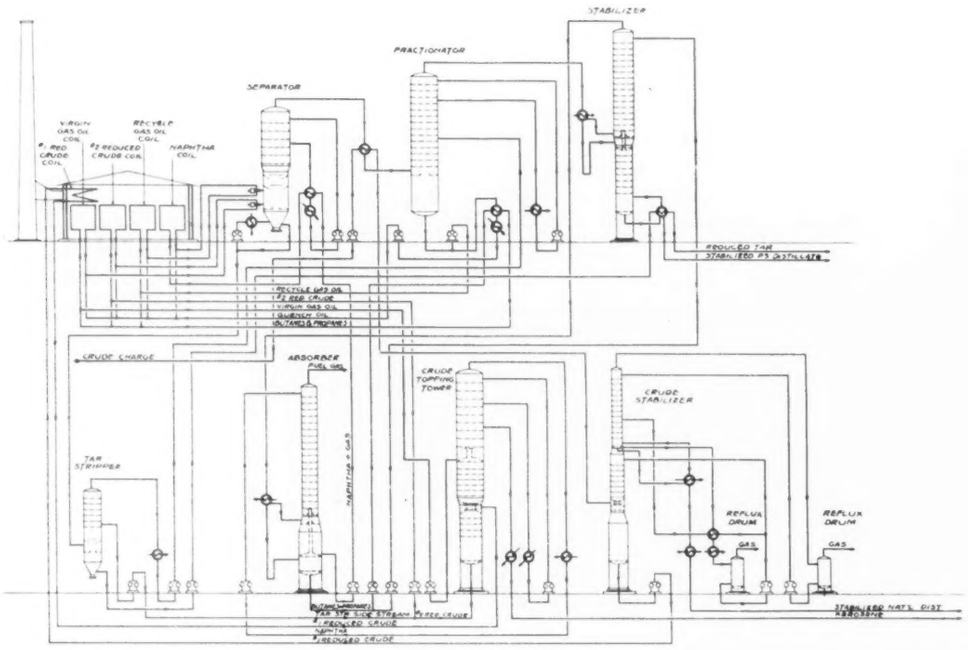

Fig. 7. This 4-coil 22,000-barrel crude topping and polyform unit replaces a conventional combination unit, polymerization unit, gas compression and absorption plant, crude and pressure still distillate stabilization plants

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gas oil and 75 to 80 aniline point for recycle stock from thermal cracking units. Typical operating pressures and temperatures for this unit are as follows:

Back pressure on naphtha coil.....	1000-1200 psi.
Back pressure on recycle coil.....	1000-1200 psi.
Back pressure on virgin gas oil coil..	500- 600 psi.
Back pressure on red. crude coil....	500- 600 psi.
Tower pressures.....	350- 400 psi.
Outlet temperature of naphtha coil..	1060-1070 °F.
Outlet temperature of recycle coil .	1000-1010 °F.
Outlet temperature of virg. gas oil coil	995-1000 °F.
Outlet température of red. crude coil.	915- 930 °F.

Typical yields when charging a 34.4° A.P.I. West Texas crude are shown in Table 5. Fig. 9 shows a comparison of octane numbers and TEL susceptibility of polyformed and thermal cracked gasolines from West Texas crude.

Properties of Polyform Gasoline

The octane number of polyform gasoline depends, like the octane number of all other cracked gasolines, to some extent on the characteristics of the charging stocks. In general the highest C. F. R.-A. S. T. M. octane number can be obtained from a naphthenic charging stock of low sulfur content and the lowest octane number from a paraffinic stock, and from high sulfur stocks. However, in naphtha polyforming, it is always possible to produce a gasoline with an octane number, C. F. R.-A. S. T. M., of 75 to 77, regardless of the characteristics of the charging stock.

This is illustrated in Table 2, which gives the yields and inspections on charge and products from three different types of naphtha charging stocks of different boiling ranges, sulfur content, and octane numbers. It should be noted that the C. F. R.-A. S. T. M. octane number of the distillate from the three charging stocks are very close, varying between 75.1 for the distillate from Mid-Continent-Pennsylvania naphtha mixture, and 76.1 from the Eastern Venezuela naphtha, while the Research octane number of the Mid-Continent-Pennsylvania distillate is the highest, 87 against 86.4 for the distillate from the Eastern Venezuela naphtha. This can be explained when comparing the C. F. R.-Research octanes with the yields from the various stocks. The yield of 83.9% from the Eastern Venezuela naphtha is the highest, while the yield from the Mid-Continent-Pennsylvania naphtha of 77.2% is the lowest, indicating a more severe conversion of the Mid-Continent-Pennsylvania naphtha.

Polyform gasoline is characterized by having a much higher appreciation between C. F. R.-A. S. T. M. octane ratings and C. F. R.-Research octane ratings than ordinary thermal cracked gasoline. The spread between the A. S. T. M. and Research octane numbers of an ordinary thermal cracked gasoline is of the order of 5 to 9, while the spread for a polyformed gasoline is of the order of 9 to 14.

The appreciation of road octane number above the C. F. R.-A. S. T. M. octane number is better for the polyform gasoline than for an ordinary thermal cracked gasoline from the same stock. Table 6 shows a comparison between C. F. R.-A. S. T. M., C. F. R.-Research, and C. F. R.-Uniontown 1937 Road octane numbers of these various gasolines and blends with straight run gasolines.

Polyform gasolines have excellent blending values in blends of straight run gasolines and naphthas, as indicated in Table 7. Its blending value with thermal cracked gasoline of 68-70 octane number, C. F. R.-A S. T. M. is practically the same as the clear octane number; the octane number of the blend being close to the arithmetic mean of the octane number of the components.

Fig. 8 presents two three-coordinate blending charts, with C. F. R.-A. S. T. M. and C. F. R.-Research octane numbers, for blends of (1) straight run gasoline, (2) thermal cracked gasoline from gas oil cracking, and (3) naphtha polyformed gasoline, all stocks of Mid-Continent origin. The inspections of these stocks follow:

	Str. Run Gasoline	Thermal Cracked Gasoline	Naphtha Polyformed Gasoline
Gravity: °A.P.I.	68.1	62.1	61.1
A. S. T. M. Distillation			
Over Point: °F.	86	87	86
End Point: °F.	322	384	402
10% at: °F.	142	125	130
50% at: °F.	217	241	244
90% at: °F.	287	350	352
Recovery: %	97.0	97.0	97.0
Acid Heat: °F.	6	172	151
% Sulfur	0.05	0.06	0.05
Octane No.: CFR-ASTM	60	69	75.2
: CFR-Research ..	60	78	87.2

To illustrate the use of these charts, lines are indicated for a blend of 35% straight run gasoline, 45% thermal cracked gasoline, and 20% naphtha polyformed gasoline, showing 67.2 C. F. R.-A. S. T. M. octane number on the one chart and 75 C. F. R.-Research octane number on the other. These charts show the high blending value of a polyformed distillate in the run-of-plant gasoline from a northern refinery.

The lead susceptibility of polyform gasolines for the same starting octane number compares very closely to thermal cracked gasolines and is influenced similarly by sulfur content. Figures 3 and 5 show the lead susceptibil-

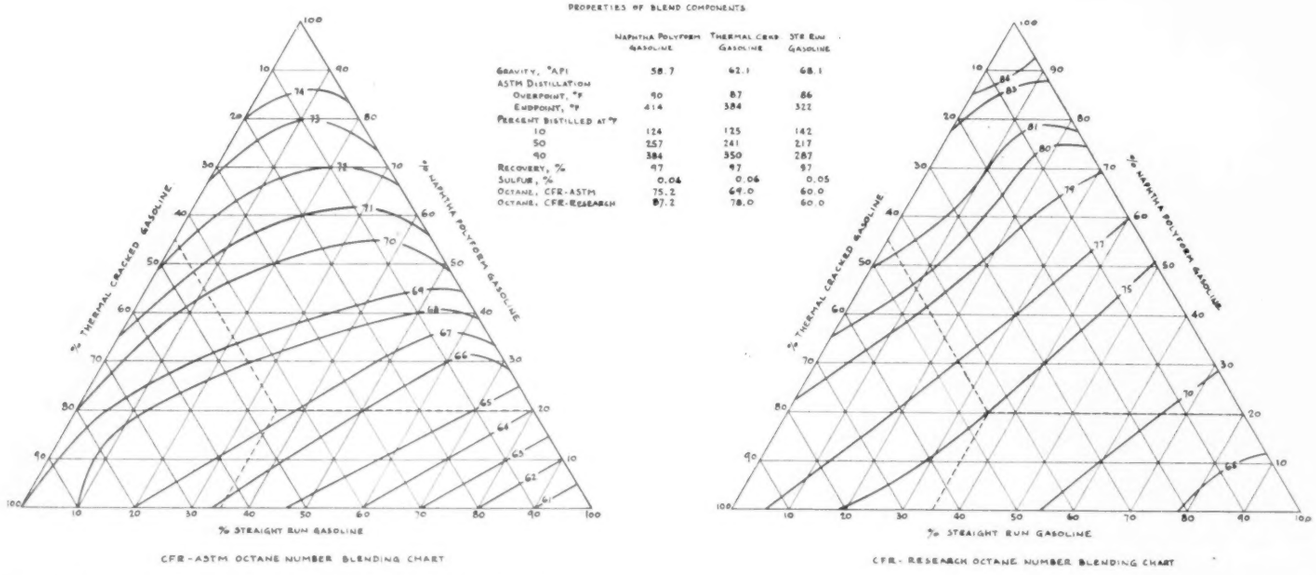

PROPERTIES OF BLEND COMPONENTS
Naphtha Polyform Gasoline
Thermal Crkd Gasoline
Str Run Gasoline
Gravity, °API 58.7 62.1 68.1
ASTM Distillation
Overpoint, °F 90 87 86
Endpoint, °F 414 384 322
Percent Distilled at °F
10 124 125 142
50 257 241 217
90 384 350 287
Recovery, % 97 97 97
Sulfur, % 0.06 0.06 0.05
Octane, CFR-ASTM 75.2 69.0 60.0
Octane, CFR-Research 87.2 78.0 60.0
% THERMAL CRACKED GASOLINE
% NAPHTHA POLYFORM GASOLINE
% STRAIGHT RUN GASOLINE
CFR-ASTM OCTANE NUMBER BLENDING CHART
CFR-RESEARCH OCTANE NUMBER BLENDING CHART

Fig. 8. These blending charts show the high blending value of a polyformed distillate in run-of-plant gasoline from a northern refinery

ity of Eastern Venezuela naphtha and West Texas straight run gasolines. Fig. 9 compares lead susceptibility of polyform and thermal cracked gasolines from West Texas crude. From this plot it should be noted that it takes 1.2 cc. per gallon of TEL, corresponding to approximately 13 cents per barrel of gasoline to lead the ordinary thermal cracked gasoline to the same C. F. R.-Research octane number as the polyformed distillate.

No Variations in Treating

The treating of polyform distillates is no different than treating conventional thermal cracked distillates and presents no added problems. Polyform gasoline made from sweet naphtha or crude may be cut directly off the unit and blended into a final colored gasoline after the addition of gum inhibitor. For use in water white gasoline blends, distillate from sweet naphtha or crude may be clay treated with a production of 3000 to 5000 barrels per ton of clay and resulting in a distillate of +30 color, an increase in C. F. R.-A. S. T. M. octane of 0.5 to 0.75 point, a decrease in acid heat, and an increase in gum inhibitor response. Table 8 shows the inspections before and after clay treating a Mid-Continent naphtha distillate.

Distillate of over 0.1% sulfur from a sour naphtha or crude may be cold acid treated with two to five pounds per barrel of acid for reduction of sulfur to specifications followed by rerunning to end point, sweetening, and gum inhibiting. The octane number drops from 0.0 to 0.5 C. F. R.-A. S. T. M., depending upon the original sulfur content and the extent of sulfur reduction. Table 8 shows the inspections on raw West Texas distillate and inspections on different gasolines with end points from 300° F. to 400° F. produced from the raw distillate by acid treating, rerunning, and sweetening. Gasoline may be sweetened by any accepted sweetening method, such as doctor sweetening, lead sulfide sweetening, etc.

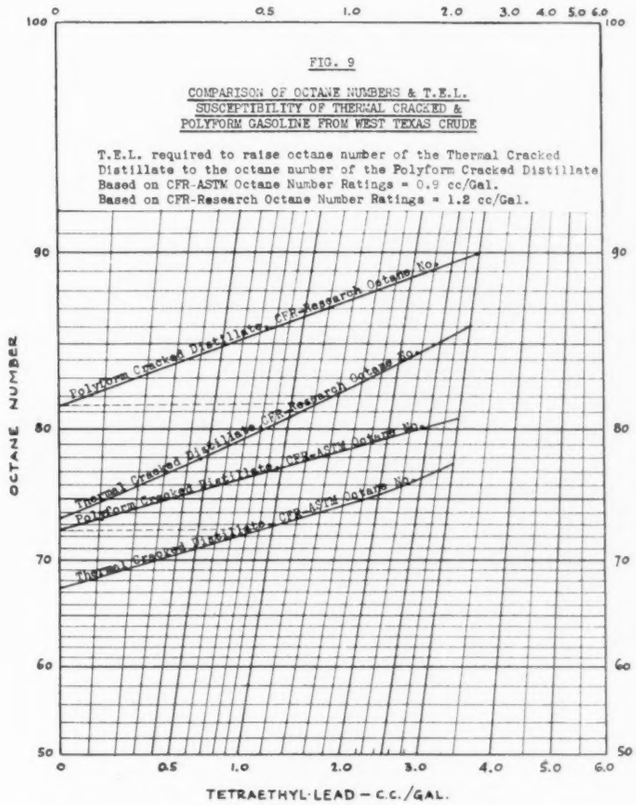


FIG. 9
COMPARISON OF OCTANE NUMBERS & T.E.L. SUSCEPTIBILITY OF THERMAL CRACKED & POLYFORM GASOLINE FROM WEST TEXAS CRUDE
T.E.L. required to raise octane number of the Thermal Cracked Distillate to the octane number of the Polyform Cracked Distillate
Based on CFR-ASTM Octane Number Ratings = 0.9 cc/Gal.
Based on CFR-Research Octane Number Ratings = 1.2 cc/Gal.
Polyform Cracked Distillate, CFR-Research Octane No.
Polyform Cracked Distillate, CFR-ASTM Octane No.
Thermal Cracked Distillate, CFR-Research Octane No.
Thermal Cracked Distillate, CFR-ASTM Octane No.
OCTANE NUMBER
TETRAETHYL-LEAD — C.C./GAL.
0
0.5
1.0
2.0
3.0
4.0
5.0
6.0
50
60
70
80
90
100

Fig. 9. A comparison of octane numbers and lead susceptibilities of thermal cracked and polyformed gasolines from West Texas crude

TABLE NO. 9

Properties of Aviation Gasoline & Safety Fuel from Polyform Gasoline

Yield Data	Naphtha	Polyformed Distillate	Finished Products Aviation Gasoline	Finished Products Safety Fuel
Volume Percent Polyformed Distillate	....	100.0	39.2	35.3
Inspection				
Gravity: °API	47.5	49.8	55.8	36.2
Sulfur, L: %	0.05	0.04	0.011	0.018
Freezing Point: °F.	....	....	....	Bel.-76
Copper Dish Gum: Mg/100 cc	....	187	1	....
Oxygen Stability, 212° F.: Minutes	....	105	300+	....
Oxygen Gum: Mg/100 cc	....	219	1	....
Acid Heat: °F.	2	68	10	2
Aromatic Content: %				
Benzene	....	4.4	....	....
Toluene	....	10.7	....	....
Xylene	....	11.6	....	....
Total	....	26.7	....	....
Aniline Point: °F.	136	37.1	....	....
Octane No.: CFR-ASTM	47	82	77	80
+ 1 cc TEL/Gal.	57	86	84	86
2 cc TEL/Gal.	....	88	88	87
3 cc TEL/Gal.	66	90	90	88
Vapor Pressure, 100° F.: Psi	....	10.0	6.2	....
Distillation, ASTM				
Over Point: °F.	266	86	114	304
End Point: °F.	431	448	307	426
10% at: °F.	290	139	156	311
20% at: °F.	296	....	170	314
50% at: °F.	311	245	205	326
90% at: °F.	372	362	250	372

Inspection of Cuts from Fractional Distillation of Polyform Distillate

Cut No.	1	2	3	4	Bottoms	Loss
Yield: % by Volume	20.5	20.5	20.4	18.9	16.0	3.7
Gravity: °API	78.5	54.7	44.4	38.8	30.2	....
Aromatic Content: %						
Benzene	3.2	11.8	7.0	....	....	....
Toluene	2.0	10.5	24.8	8.7	....	....
Xylene	....	3.8	14.5	34.8	1.9	....
Total	5.2	26.1	46.3	43.5	1.9	....
Aniline Point: °F.	....	51	26.3	11.3	....	..
Distillation, ASTM						
Over Point: °F.	71	132	196	248	324	....
End Point: °F.	263	312	328	364	436	....
10% at: °F.	77	157	212	265	336	..
50% at: °F.	117	182	233	285	355	....
90% at: °F.	188	227	272	322	396	....

Modify Conditions for Aviation Fuel

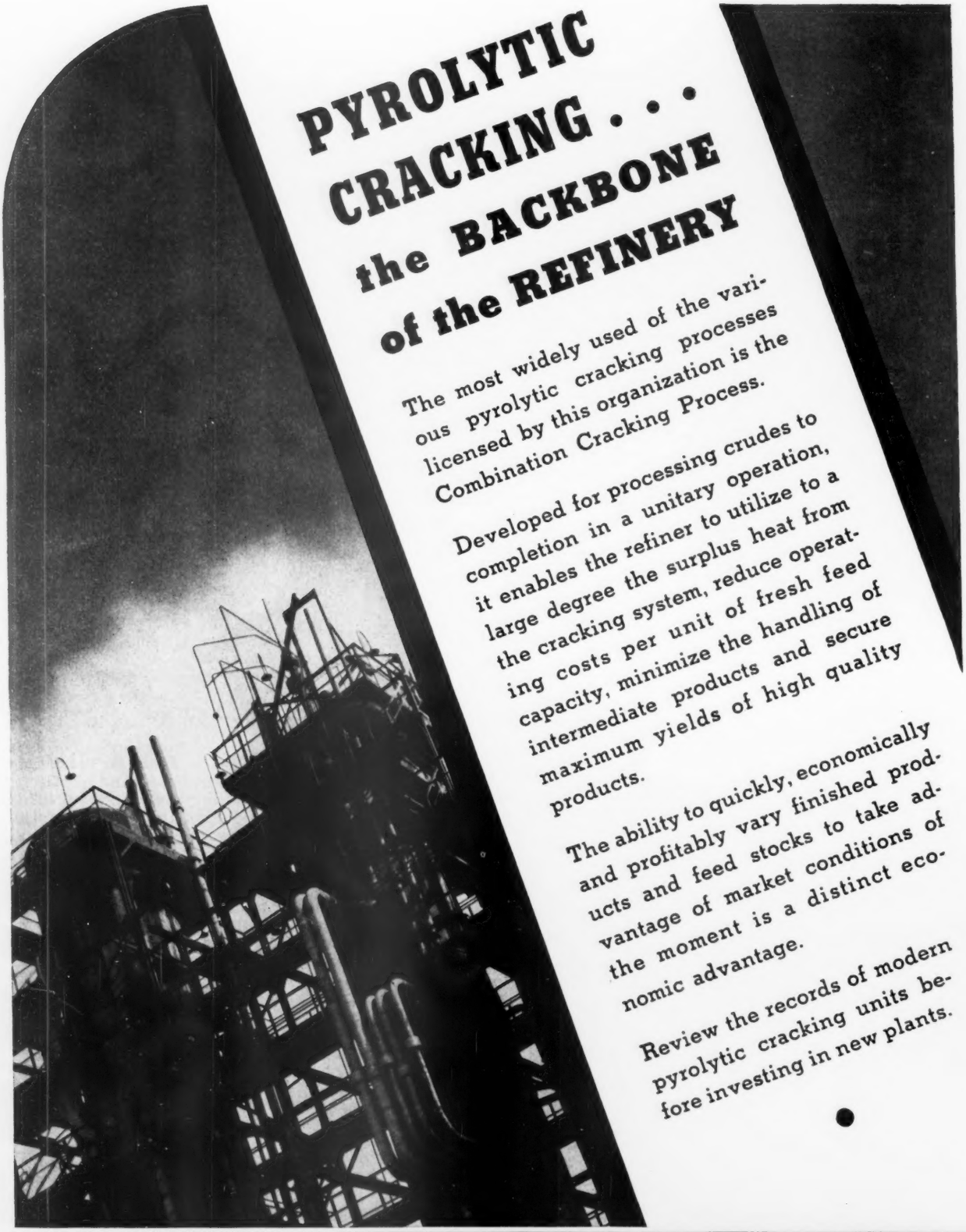
With modified operating conditions a Polyform unit can be adjusted to produce a distillate with an octane number C. F. R.-A. S. T. M. of from 80 to 84. A distillate of this type may be produced from any type of stock, but preferred stocks are gasolines, naphthas, kerosine, and light furnace oils. The 80-84 octane distillate is highly aromatic and can be acid treated to produce a satisfactory aviation gasoline of approximately 77-79 C. F. R.-A. S. T. M. octane number, which can be leaded to 90 C. F. R.-A. S. T.-M. octane number with less than 3 cc. of TEL per gallon, and an 80 C. F. R.-A. S. T. M. octane number aviation safety fuel with boiling range between 300° F. and 425° F.

To produce these aviation fuels the distillate is first separated into a light and a heavy cut by rerunning. The light cut is cold acid treated with 20 pounds of 98% acid and rerun to aviation gasoline boiling range. The heavy cut is treated with 5 pounds of 98% acid and rerun to safety fuel specifications. Table 9 gives the inspections of the original charge naphtha, the 82 C. F. R.-A. S. T. M. octane number distillate produced from this naphtha, and the finished aviation gasoline and safety fuel produced from the distillate.

The foregoing operation may be carried out with a somewhat modified flow arrangement to yield an increased amount of aviation gasoline without the simultaneous production of safety fuel. It will be noted from Table 9 that the aromatic content of the 82-octane distillate, particularly toluenes and xylenes, is high and that these fractions may be readily concentrated by distillation.

Acknowledgment

Due credit is given the operating personnel, laboratories and technical staff of the Gulf Oil Corp. for the inspection, analytical and operating data recorded in this paper.



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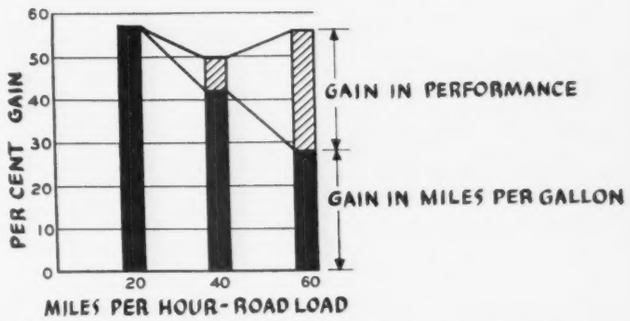
Better Mileage Is Now Preferred From Fuel, Engine Improvement

The accompanying article, and the one following, bring out the high spots of only a few of the papers presented by the Petroleum Division of the American Chemical Society in Detroit last week. Additional coverage will be given in these pages in the issue of October 2.

APPARENTLY motorists are beginning to prefer to take the benefits of further improvements in motor fuels and advances in engineering in increases in mileage per gallon, T. A. Boyd, well known General Motors fuel engineer, told the Petroleum Division of the American Chemical Society at its 100th meeting in Detroit last week. Dr. Boyd, the only representative of the automotive industry contributing to the Division's Symposium on the Contribution of Petroleum Chemistry to the Automotive Industry, presented a paper in which he discussed the "Future Needs in Fuel and Oil for Motor Transport."

If this observation is correct, he concluded that "one of the advances that would aid greatly in making higher fuel economies possible would be further increases in the octane number of gasoline." The principal prospect of a further major improvement in gasoline at present, he pointed out, lies in the elimination of knock.

Experimental data on the gains in miles per gallon with gasoline of approximately 100 octane number as compared with one of 70 were shown by the accompanying chart. These results were obtained by boosting the compression ratio of the engine in a conventional car and modifying the axle ratio to give the original performance at 20 to 30 miles per hour. Then at 20 miles per hour the entire gain of a little over 55% was in miles per gallon. At higher speeds the gain was divided between miles per gallon and performance in the proportions indicated.

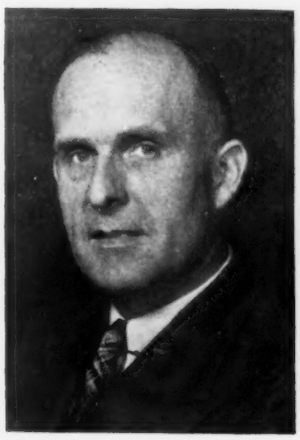


Performance and mileage gains with a motor fuel of 100 octane number as compared with one of 70 in engines designed to take full advantage of each fuel

Higher Octane Fuels "Sensitive"

"There are, of course, some problems relating to the use of high-octane fuels in automobile engines, such as a more critical tendency to knock," Dr. Boyd said. "Of these problems one of the biggest relates to the large shifts in degree of freedom from knock which high-octane fuels themselves sometimes undergo as engine operating conditions change. This is the same thing that exists, but to a relatively minor degree, in motor gasoline of the present and which is called 'sensitivity.' But in the case of fuels of high degrees of freedom from knock the magnitude of the fluctuation with changes in engine operating conditions may, by comparison with present-day gasolines, be extremely large. Thus, the higher the octane number the more important it is going to be to fit the engine to the fuel and the fuel to the engine."

Speaking of the importance of freedom from knock to aviation fuels, Boyd said "the maximum mean effective pressures of aircraft engines using the best commercial fuels of the time have arisen from 125 psi. in 1930 to 200 pounds and more today. . . . . But mean effective pressures as high as 600 pounds are said to have been obtained in



Per K. Frolich, Standard Oil Development Co., concluded his second year as chairman of the Petroleum Division of the American Chemical Society. Dr. Frolich is one of the group from Esso Laboratories who took part in the development of butyl rubber which was described at two of the sessions at the 100th meeting last week.

M. R. Fenske, named chairman of the Petroleum Division's Symposium on the Contribution of the Petroleum Industry to the Automotive Industry, was kept away from the meeting by illness. He was elected vice chairman of the division for the coming year.

C. R. Wagner, chief chemist of Pure Oil Co., and secretary of the American Chemical Society's Petroleum Division, has had a leading part in the activities of the division since its organization. He is a pioneer in developing polymerization of gaseous hydrocarbons and a strong believer in applying chemical methods to refining.

T. A. Boyd represented the Automotive Industry on the Petroleum Division's symposium on Petroleum Industry Contributions to the Automotive Industry. Dr. Boyd is well known to the petroleum fraternity through his activity in A.S.T.M. Committee D-2 and work on detonation of gasoline, some of the results of which he discussed in relation to higher octane number motor fuels.

small engines with special non-commercial fuels. It thus seems reasonable to suppose that the need for higher horsepowers per pound in aircraft will stimulate the production of aviation gasolines of still higher degrees of freedom from knock, i.e., of more than 100 octane number, as well as the development of power plants capable of using such knock-free fuels to advantage."

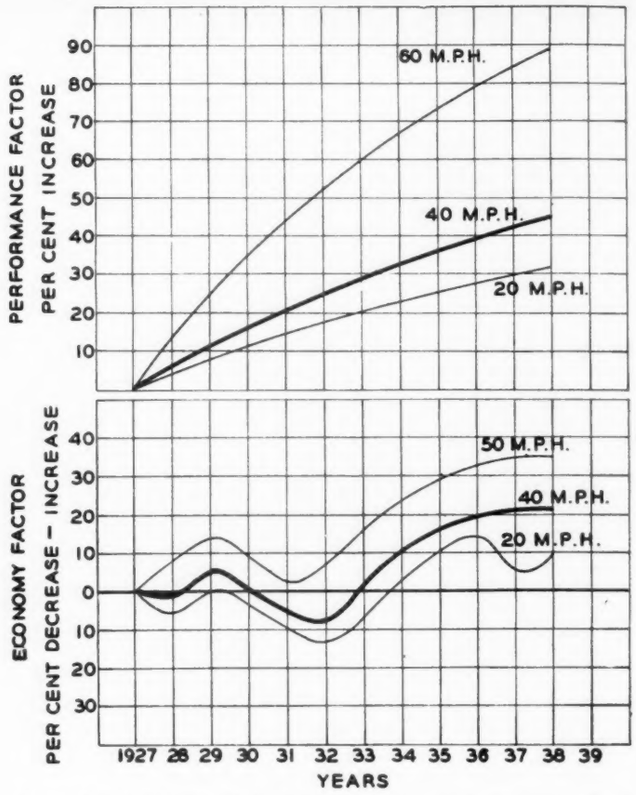
Difference of opinion about how much safety fuels can contribute to safety makes this fuel's future difficult to foresee, he said, but to whatever extent such fuels may be found useful, it will demand the making of high-octane hydrocarbons boiling at 300° F. or more, for that is needed to give the required flash point of about 105° F.

The use of diesel fuels in automotive vehicles is still too new for past experience to point future directions clearly, he added. Ignition quality and volatility were named as two important factors influencing engine performance. Since high cetane number is an aid to starting, to smooth combustion, and in some instances to smoke-free and odorless burning and to high fuel economy, these were believed to be an indication, at least for trucks and buses, "that diesel fuels are likely to be as much higher in cetane number than those of today as technology and economics will permit. Reference was made to a suggestion of Barnard and Fox, Standard Oil Co. (Ind.), "that such increases in cetane number may be only about 10 units above the present average of approximately 45." With respect to volatility he said that although future engines may well be less sensitive to volatility from the standpoint of smoking, there will always need to be some upper limits on the boiling range of diesel fuels used in the automotive type of motor transport.

Non-Ignition Zones in Aviation Fuel

As an outgrowth of tests of the fire hazards of different fuels used in aircraft, C. W. Sortman, H. A. Beatty, and S. D. Heron, Ethyl Gasoline Corp., discussed spontaneous ignition temperatures in air, and the corresponding time lags, in relation to temperature zones of non-ignition above the minimum ignition temperature.

The existence of one or two well-defined temperature zones of non-ignition above the first or minimum ignition temperature had been reported previously for some of the paraffinic fuels. This type of behavior is familiar in vapor-phase oxidations studied by both the flow and static methods, but has not been reported heretofore for the Moore method using a steel crucible, it was pointed out. The appearance of two zones of non-ignition at atmospheric pressure is novel, it was said. This phenomenon was studied, therefore, in some detail for cetane as a function of air flow rate and liquid drop size, and for heptane as a function of drop size. For comparison, a number of other hydrocarbons were tested at one or two liquid drop sizes.



A graphical picture of how performance and economy have been boosted in recent years

The pressure was held at one atmosphere and the liquid charged in drops and not atomized. These two provisions are in accord with the conditions normally involved in consideration of the fire hazard of a liquid but prevent the test from showing good correlation with the behavior of the liquid as a fuel in internal-combustion engines, the authors indicated. The results of the tests were shown graphically in plots of drop size against ignition temperature. They were in general accord with previous experience in the field of spontaneous ignition temperature measurements. The range of temperatures was from 400° to 900° F. Addition of tetraethyl lead completely inhibited ignition up to about 850-1000° F., the authors reported.

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Comb Lube Oil Distillate To Sift Out Undesirables

THE systematic separation of a lubricating oil distillate by selective solvent extraction and fractional distillation, which allow the construction of three-dimensional diagrams such as those shown herewith incorporating yield, viscosity index, and molecular weight or viscosity, was described in a paper by M. R. Fenske and R. E. Hersh, Pennsylvania State College, during the American Chemical Society's Petroleum Division Symposium last week.

Separation was made into 0.6 to 1.4 weight per cent fractions of the original oil. The isometric diagrams permit an estimation of the distribution of oil fractions with respect to molecular size and molecular type, it was indicated. When used in connection with graphs of boiling point and aniline point isotherms superimposed on the composition diagram, methods for segregation of any portion of the oil are suggested.

In starting this program it was believed that the properties of constituent fractions of lubricating oil would assist greatly in obtaining an exact analysis of the types of compounds present in the raw stock and would suggest methods for eliminating undesirable constituents from the finished lubricant. The methods of separation were selected because of their practicability, comparability with plant processes, and ease of reproducibility of results. Distillation separates hydrocarbons according to their relative boiling points or molecular size while selective extraction separates them more in accordance with the relative solubility or type of compounds present. The combination allows maximum flexibility in controlling any desired separation.

The solvent used was 98-99% acetone. In the solvent extraction process, which was performed first, the solvent was pumped to the bottom of a 4-inch diameter auxiliary tower into which incoming oil, saturated with solvent, is pumped at a rate greatly in excess of that governed by its solubility in the solvent. The solvent passes through the oil and flows from the top of the auxiliary tower to the bottom of a jacketed 30-foot contacting zone 1.62 inches I. D. and packed with ½-inch carbon Raschig rings. The solvent layer passes from the top of the tower to a vaporizer where solvent is separated by distillation and the extract is re-

moved, a portion being used for refluxing the 30-foot counter-current contacting section.

The extracts were removed as 125 one-quart fractions. These were blended in consecutive groups for further separation by distillation or re-extraction after the properties of the individual fractions were correlated to expedite the blending. Fractional distillation took place in a 5-gallon unit having a 9-foot fractionating section with the equivalent of 7 to 10 theoretical plates.

Three-Dimensional Charts

"Comparison of the physical properties of the fractions with those of synthetic hydrocarbons indicates that the oil fractions, while perhaps far from being separated into pure compounds, are segregated into groups ranging from monocyclic naphthenes and polycyclic aromatics." In the accompanying diagrams the height of blocks above the base represent the relative amounts of portions between definite limits in viscosity index and viscosity. In the accompanying charts molecular weight is used to represent molecular size or viscosity. A second scale shows the number of carbon atoms per molecule ("n"). Other scales are included for kinematic viscosity index (K.V.I.), weight per cent aromatic rings per molecule, and the value of "x" in the general formula C_nH_{2n-x}. Scales labeled "Cum. Wt. %" show the cumulative addition of all the material between any co-ordinate line, or vertical plane through that line, and the corresponding rear edge.

A series of curves representing the projection of surfaces of the three-dimensional model enabled complete interpolations of the quantities within definite ranges. The general outline of the composition is of interest in showing "that although the low-molecular weight side conforms with the expected distribution for the original distillate, there is an absence of low viscosity index material of high mo-

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lecular weight. Sufficient work was done on heavier fractions and residuums to determine that the absence of such material was not a peculiarity of the particular oil investigated or the procedure employed. Extending the size of the crude fraction appears merely to extend the corresponding molecular weight ranges without changing the general shape of the outline. It seems, therefore, that the very high-molecular weight substances present in this oil always have high values of viscosity index irrespective of chemical type."

"The separation accomplished in this investigation, while probably insufficient for strict chemical analysis of components, serves to yield some valuable theoretical and practical information" it was concluded.

Motor Oil Oxidation Test Developed

The rate of lubricating oil oxidation, as determined by a new laboratory apparatus and procedure, was presented by a Pennsylvania State College group also. The studies were conducted in an elaborate system in which 15 liters per hour of oxygen are circulated through a 250-gram sample of an oil maintained at 266-356° F. for 50 hours. Methods were developed for determining all of the volatile and non-volatile end-products of the reaction so that 90-100% of the oxygen absorbed by various oils is accounted for.

It was concluded from results of tests of several commercial light oils that "much of the oxidation mechanism remains to be understood before corrective measures are generally applicable." Attention was given the formation of lacquer and insolubles and these products were found to compare favorably with lacquer formations obtained in engine tests although the engine lacquer samples appeared to be somewhat lower in oxygen content than the laboratory samples. The engine tests include runs in a Chevrolet engine and in a Lauson one-cylinder engine, the latter being operated both with and without combustion taking place.

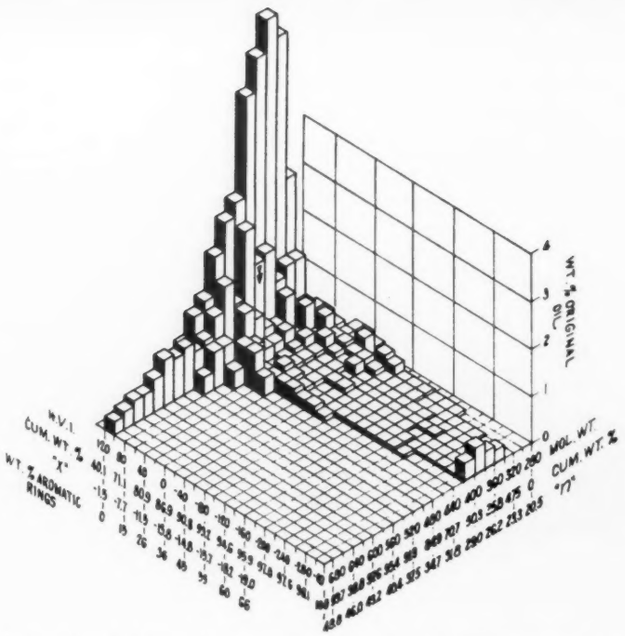
Lacquer as produced by laboratory oxidation was a dark-brown powder relatively insoluble in benzene, partially soluble in chloroform, and somewhat soluble in pyridine. The lacquer from the unfired runs more nearly resembled materials produced by laboratory oxidation and most of it could be brushed off the piston surface without the use of a solvent after removing the oil with isopentane. The material from the fired runs was dark brown or black and required pyridine and a brush to remove it.

A number of factors involved in lubricating oil deterioration were evaluated. The rate of oxygen absorption was found to double for each 10° C. (18° F.) temperature increase over the range 266-356° F., providing it is not limited by physical factors. The presence or absence of water vapor in the oxidizing atmosphere has little effect on the oxidation of one type of oil. Oxidation of certain oils was greatly reduced by adding natural or synthetic inhibitors. Clay treatment may either reduce or improve the stability of an oil, depending upon its nature, it was found, and iron, copper, and lead are strong catalysts for oil oxidation when present either in metallic form or as naphthenate salts.

Natural Inhibitors in Some Oils

Certain types of oils, however, were found to have a natural ability to counteract the catalytic effect of dissolved iron salts and the use of a phosphite additive was found to control or eliminate catalysis by certain iron, copper, or lead salts, but such additions were frequently accompanied by other changes in the oils so that the overall effect is more complex than simply a reduced degree of oxidation. Addition agents were found capable of making marked changes in the degree of oxidation occurring in oils but must be studied individually to understand all the changes induced by their presence.

These conclusions came from the study of the oxidation of seven selected components of a lubricating oil stock after separation into 124 fractions by a combination of vacuum distillation and solvent extraction applied to a semi-refined oil. These components were of two classes: one of low aromatic ring and relatively high viscosity index and the other having higher aromatic ring content and an intermediate viscosity index. It was considered significant that the original oil was intermediate in composition between the two classes but was much less susceptible to oxidation than any member of either one.



A graphical isometric representation of the composition of a typical Pennsylvania lubricating oil stock. Molecular weight represents molecular size, "n" is the number of carbon atoms per molecule, K.V.I. is kinematic viscosity index, and "x" is the value in the formula C_nH_{2n-x}

While the last fact suggests that damage was done to the oils by the extensive processing, it was found that the recombination of all 124 fractions in the original proportions produced approximately the same physical characteristics and oxygen susceptibility of the original oil were obtained. It was found possible to separate fractions containing certain materials which inhibit the oxidation of susceptible experiments, made to observe the effect of adding these to certain oils.

Metal Significant in Deterioration

The most significant factor in oil deterioration in engines was said probably to be the presence of a wide variety of metals. Iron, copper, and lead were given particular attention. Of the dissolved salts copper was said to be the most effective and lead the least on a weight basis. The bulk metals appeared to be less readily inactivated by natural materials in the oil. The copper and iron surfaces become less active as oxidation progresses becoming coated with lacquer while lead, whose action correlates with the high oil solubility of lead salts of organic acids, kept its bright surface and had lost considerably more weight. While a catalyst was found to increase the production of oil-insoluble materials in a regular manner, it did not affect the lacquer value. This was taken to indicate that lacquer formation is not so much a function of the extent and rate of oxidation, but may be dependent upon the time a surface is exposed to the oxidizing oil and to the temperature.

The use of phosphite as an additive intended to reduce lubricating oil deterioration was shown to render metal naphthenate catalysts (iron, copper, and lead) practically inert in promoting the oxidation of the original oil. Another effect was an increase of 15-25% in absorbed oxygen which is recovered as water. The higher water production was also accompanied by a lower viscosity increase.

It was concluded that the composition of lubricating oil seems the logical basis on which to co-ordinate all knowledge of lubricating oil properties. It was recommended that such oxidation studies should be extended to include higher molecular weight pure hydrocarbons and their mixtures.

Rack Handles 16 Trucks at Once

By building its loading racks and dispatching office as a unit, and by the use of automatic recording and printing meters, Home Fuel Oil Co. has entirely eliminated a yard man and greatly cut down truck loading time, at its new loading plant at Passaic, N. J. Trucks load at the rate of 500 to 600 gals. a minute. At the corner of the roof of the racks can be seen the sound amplifiers by which order clerks in the building inform the drivers outside what loads they are to take out. This photo was taken before construction was finished, which is to include paving the yard

A NEAT, 3000-gal. company truck swings from the street into the bulk plant yard and approaches the loading rack.

Through voice amplifiers on the loading rack, a clerk in the adjacent dispatching office tells the driver where to spot his truck and what to take out on his next load.

Having spotted the truck, the driver climbs down to get a section of bronze pipe for bottom loading, which is quick-coupled to the 3-in. loading line. The order clerk, meanwhile, has inserted, in a meter duplicator in the office, the order ticket for the load the truck is to take out and has moved a lever which unlocks that meter.

The driver, back on his truck, with the fill line inserted in the first compartment to be filled, pulls a cord which opens the valve on the fill line. The meter begins to click; the flow of liquid starts. Holding tension on the cord in his hand, which keeps the valve open, the driver watches the figures on the duplicator. He shuts off the flow by releasing the cord, just long enough to move the fill line to the next compartment manhole, and so on until the truck is loaded.

Then the driver steps into the dispatching office and is handed his order ticket, which has been automatically filled out by the meter duplicator, and his routing schedule and cards showing delivery instructions for regular customers. He is then ready to start out. There is no yard man. The driver gets all his instructions from a clerk inside the dispatching office and the clerks also do what checking of the loading is necessary under this nearly-automatic system.

If the entire loading operation of the 3000-gal. truck has taken more than 11 minutes, the company superintendent of operations is likely to be looking into the reason for the delay.

When the driver leaves the yard with his load, he goes on a route with which he is familiar. His truck has been inspected by a garage mechanic within the week, to anticipate all possible chances for delay or breakdown on the road.

The dispatching office beforehand has studied cards of all customers in the area the truck is to cover, which, for greater convenience in assigning delivery orders, has been blocked out in square-mile zones. Thus, the maximum number of fills is made and, except for special calls or new business, it should not be necessary to send a truck into that district again for 3 days.

This procedure briefly explains how the Home Fuel Oil Co., with headquarters at Passaic, N. J., serving the fuel oil needs of any types of domestic and industrial customers in 4 counties in northeastern New Jersey, with a population of about 2,500,000, has been able to greatly reduce its truck delivery costs, by installing a new, highly-systematized loading rack at its Passaic, N. J. plant. Much the same efficient method is applied in operating its gasoline trucks.

The Home Fuel Oil Co., has 6 bulk plants in northern New Jersey, the one at Passaic being the largest. The new loading rack was put into operation last January. Storage capacity at this plant is around 13,000,000 gals. It is on the Passaic river and receives supplies by barge.

The company has an 8,000,000 gal. deep-water terminal on the bay at Newark and 3,000,000 gals. tankage on the Hudson river at Edgewater, N. J., and bulk plants at East Orange, Englewood and Ridgewood, totaling 1,600,000 gals. capacity.

HOME Fuel operates about 100 trucks out of its 6 plants. All trucks are equipped with pumps, and meter-printers. The company is engaged in a program of replacing its smaller fuel oil delivery trucks with new 3000-gal. units, as the old trucks become obsolete, according to W. H. Butler, vice-president and general manager. The company, he added, has found that 3000 gal. units are the most practical in its type of operations.

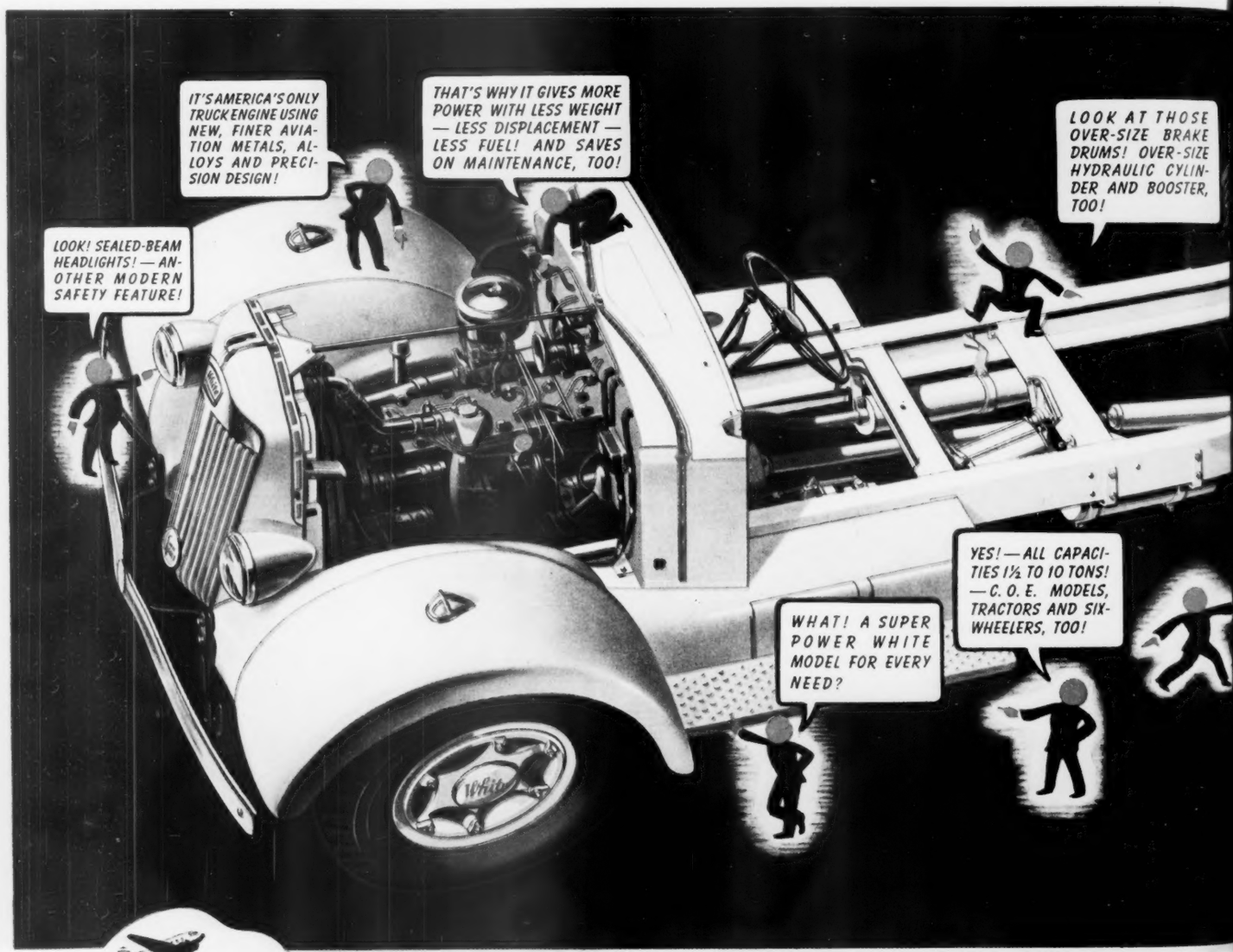
The Passaic plant is less than a mile from the center of town, on a strip of land between a principal highway and the river. Its storage tanks are entirely separated from loading facilities by a concrete wall.

The pump house is on one side of the yard against this wall and about 50 yards from the loading rack.

Valves controlling the manifold are just outside the pump house. Motor driven centrifugal pumps are used. Two have rated capacity of 1500 gallons per minute through 10-in. lines. Three have capacity of 1000 to 1200 gpm. and 2 others will pump 750 gpm. through smaller lines. Electric

Introducing Precision Tools of Transportation for 1

A FULL LINE OF WHITE *SU*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THAT'S WHY IT GIVES MORE POWER WITH LESS WEIGHT — LESS DISPLACEMENT — LESS FUEL! AND SAVES ON MAINTENANCE, TOO!
LOOK AT THOSE OVER-SIZE BRAKE DRUMS! OVER-SIZE HYDRAULIC CYLINDER AND BOOSTER, TOO!
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YES! — ALL CAPACITIES 1½ TO 10 TONS! — C. O. E. MODELS, TRACTORS AND SIX-WHEELERS, TOO!
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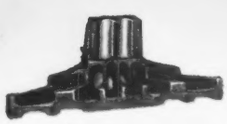

METERING MANIFOLD Six graduated ports, fed by a dual carburetor, assures that each cylinder receives the same balanced mixture with condensation reduced to an absolute minimum. No "starved" end cylinders. Improved power. Saves gas.

SODIUM-COOLED VALVES . . . Internally cooled by means of Metallic Sodium—a pure metal which turns to liquid at 210°.—(Standard in all medium and heavy models; available in light at slight extra cost.)

HYDRAULIC VALVE LIFTERS . . . Used only on White products, airplanes and America's most expensive passenger car — they *eliminate* "tappet adjusting." Valve timing is 100% accurate. Fuel is saved. Power is improved.

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SUPER POWER TRUCKS

AERO-ENGINEERED*

THAT'S WHY THERE'S 30% LESS STRESS ON THE BRAKE SYSTEM! WITH FASTER ACTION—LONGER LIFE—LESS FREQUENT ADJUSTING!
NOTICE THE NEW 1941 STYLING—BEST LOOKING TRUCK ON THE ROAD!
WHITE SUPER POWER TRUCKS HAVE PROVED THEMSELVES IN OVER 500 MILLION MILES OF TRANSPORT SERVICE!
YES! AND THAT'S THE HARDEST TYPE OF SERVICE THERE IS! TRANSPORT TRUCKS HAVE TO MAKE MONEY!

Here is White's proudest contribution to motor transportation in the 40 years that White has been building to make trucks better money-earning tools of business.

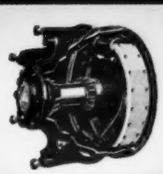
All the quality, precision and craftsmanship that have made White the greatest name in trucks have been lavished on this new complete line of White Super Power Models. They are the first trucks so advanced in design . . so efficient in power output that they use the same costly metals and alloys developed to meet aviation's need for high horsepower with low weight and the utmost in dependability.

You can feel the difference at the wheel and see it on your books . . greatly improved performance in traffic and on hills . . remarkable fuel economy . . lower maintenance cost over high mileages. This is a proved statement, not an engineering claim. Already, White Super Power has a background of more than 500 million miles of service in the one hardest type of truck work . . the transport field. Here it has proved able to earn an extra $1200 and more per truck per year.*

Find out today what White Super Power can do for you. Phone your local White Branch or Dealer for a demonstration or write THE WHITE MOTOR COMPANY, Cleveland, O.

**Available operating records covering thousands of White Super Power Trucks in the service of the country's leading transport companies show these results.*

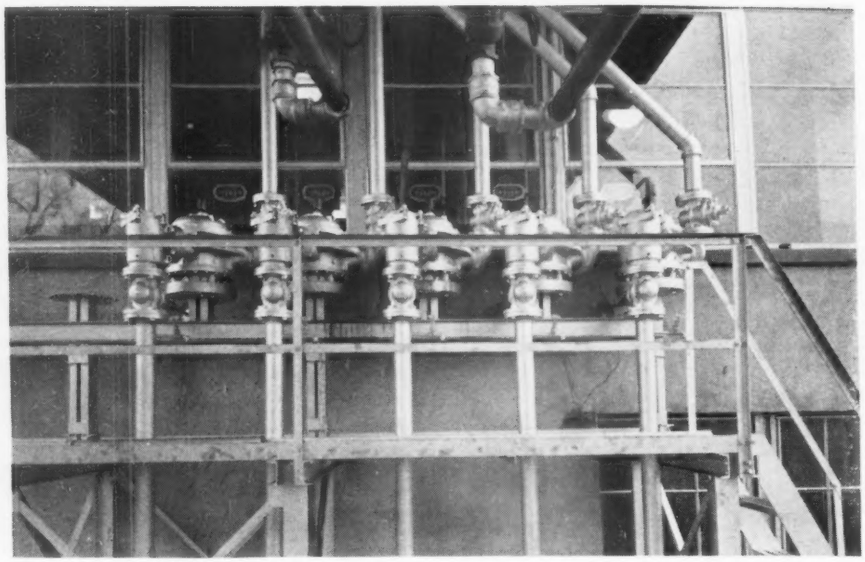
IDIUM TREATED EARINGS . . . Aviaon-type copper lead, pregnated as in high wer output aviation gines—with Indium. vents deterioration e to acid condition the oil.



SUPER POWER HYDRAULIC BRAKES . . . Oversize in construction, faster in action with approximately 30% greater safety factor than with ordinary booster and brake cylinders.

SUPER POWER AXLES . . . Complete range of single, double reduction and 2-speed Super Power types. Utilizing new heat-treated metals for extra strength, longer life and less dead weight. Proved in months of laboratory tests by America's leading authority on gear and axle standards and in hundreds of thousands of test miles in mountains, in high speed runs over Arizona desert roads and in sand pit service.

SUPER White POWER



A battery of 3-in. meters installed on a steel platform at the loading rack of the Home Fuel Oil Co. at Passaic, N. J., is shown here. Just above the meters can be seen the recording faces of the duplicators inside the building. From the trucks, the drivers fill their compartments by watching the readings on these meter-printers, which also automatically make out the order ticket for the truck load

switches controlling the pumps are in a separate building, some distance from both the pump house and loading rack. Mixing chambers and supplies for the foam system for fire protection of the tanks are located in this building.

The combined loading rack and office building is 36 by 36 ft., and is constructed of pre-fabricated sectional steel.

The first floor contains a fireproof vault for records, locker rooms and restrooms for employes, and a large room which houses the business machines the company is putting in to simplify its bookkeeping. Large rectangular room extending across the building on the first floor is used to hold meetings of drivers and salesmen.

THE outside walls of the second floor of this building are all glass, enabling the dispatcher and order clerks to see any point in the yard without leaving the office, in most cases without leaving their desks. Handling of orders, dispatching of trucks and keeping of company records is done on this floor.

The third floor has offices for A. L. Kent, operations manager for the Home Fuel Oil Co., and for other officials. General headquarters for the company, however, are in a bank building in the center of town.

There are 2 outside entrances and lobbies on the second floor of the dispatching office. One is used by range oil peddlers, and wholesalers who receive supplies at this plant. The other entrance is for the drivers of the company's trucks. They are kept separate to prevent confusion between the company's own operations, and its sales to other distributors.

The loading rack is built in form of a cross, with the dispatcher's building at the intersection of the four wings. Each wing extends outward 46 feet; each has 4 spots so that 16 trucks can be loaded at one time. Trucks are routed clockwise around the rack to avoid congestion. Nine products—5 grades of fuel oil, 3 grades of gasoline and kerosine—are handled through the rack. All products are metered, with truck order tickets made out automatically by meter-printers.

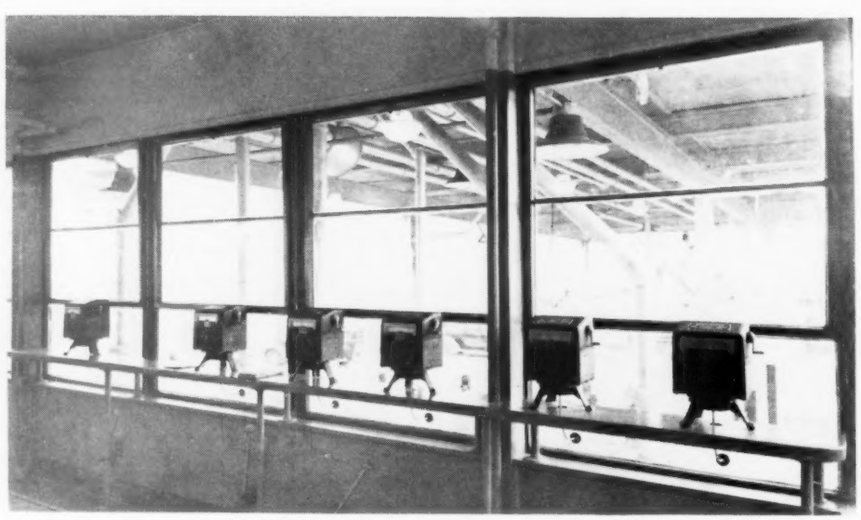
Loading racks are of steel, with 6 steel pillars supporting each rack.

Along each side of the outside wall of the building, a few feet below the level of the windows on the second floor, is a steel platform. These platforms carry the steel posts, on which the battery of meters for each loading rack is placed, and provides for convenience in reaching the meters. There are provisions for 9 meters on each rack, 36 for the entire unit, but only 27 have been installed so far. The meters are all 3-in. Lines to the meters come up on the outside wall of the building.

ON a ledge just inside the windows on the second floor is a row of meter duplicators—one for each meter—which automatically print a record of amount loaded in each truck. Meter printers operate off a cable extending through the window, outside to the meters. Below each printer and on the inside of the wall is a lever which unlocks the meter. The recording numerals have been reversed and face the outside. Figures are large enough so they can be read by a driver outside the window even though his truck is spotted on the outside lane.

Truck routings are arranged before the truck comes into the yard. The driver does not have to leave his truck until it is loaded and he is ready to get his order ticket and route schedule. The 2-way sound amplifying system, with a speaker on each rack, enables the driver on his truck and an order clerk inside the office to carry on a conversation, if necessary to clarify instructions for his next load.

While the driver is spotting his truck, the order clerk inserts in the back of the meter duplicator the order ticket, 4 copies of which are automatically made. Each duplicator prints a key letter, identifying the meter used, recording the amount and the product. It gives the meter reading at start and end of filling operation.



The meter duplicators, which automatically print meter readings, are here shown inside the dispatcher's office. The connection to the meter is shown, also, in the wall below, the lever by which the dispatcher unlocks the meter, when th truck is ready to fill

The Dubbscracking cure

Recovery of many an ailing refining company dates from the day a Dubbscracking unit started operation in its plant

And more than one refiner has gone under because he put off too long taking the Dubbscracking cure

Universal Oil Products Co
Chicago, Illinois

Dubbs Cracking Process
Owner and Licensor

Order tickets are numbered consecutively, so each can be accounted for. The closing reading on one ticket must be the same as the starting reading on the next ticket.

Control of the flow line is entirely in hands of the driver on his truck, who watches recording on duplicator inside the window. Flow of liquid cannot start, however, until the order clerk unlocks the meter.

The 27 loading lines on the rack are 3-in. Lines used for fuel oil from plant storage to the pump house are 10-in.; 8-in. lines run from pump house to manifold, with 3-in. lines from manifold to meters.

Bottom loading is the practice to prevent frothing. Kept at each rack are sections of 3-in. bronze pipe, with a flexible section near the top, which can be coupled to the fill lines. These extend to bottom of truck compartments. The fill lines are (slip-tube) sleeve-type, so the end can conveniently reach any compartment from same position of the truck.

Routing System Cuts Cost Of Delivery Trucks

The system of dispatching trucks and making up route schedules which this company follows has also aided greatly in reducing truck costs per gallon delivered. Here the practice of zoning the complete delivery area into square-mile zones has proven a distinct advantage.

To appreciate truly the value to this company of zoning the delivery area, one must be familiar with this section of northern New Jersey, adjacent to New York City. Some districts are industrial, with large and small plants. Many are of the better-class single dwellings and apartment-house neighborhoods. Others are thickly populated districts of factory workers.

A large map in the dispatcher's office shows the streets and municipalities in the area have been ruled off into zones one-mile square. That is, vertical lines, one mile apart, are drawn on a map of the sales area. These vertical lines are lettered a, b, c, etc. Then horizontal lines, one mile apart, are drawn on the map and numbered consecutively.

In cases of areas of extremely heavy distribution, the mile-square zones are halved, or quartered, while in sparsely settled areas the zones are combined and might be 2 miles square.

Therefore, each of the company's customers are located in zones which are numbered and lettered.

Zone designations are put on customers' records, and as they come up for delivery, the zones are noted. From the zone designations, trucks are dispatched so that the part-load deliveries are made within the smallest area possible, decreasing to a minimum the time consumed between stops.

Customers of the company are divided into three classes, A, B, and C. The Class A customer buys fuel on the "keep-filled" basis. The Class B account is one to whom the company does not deliver unless someone is at home. Class C customers are those who will not accept delivery unless they order it.

An official of the company estimates that a fuel oil marketer, to have the most complete and efficient truck dispatching method possible, must have at least 70% of its customers on the "keep-filled" basis. Home Fuel has a greater percentage of Class A than they consider necessary for efficient dispatching.

For its "keep-filled", or Class A customers, the dispatcher at the Home Fuel plant works out delivery schedules for about a week ahead, under ordinary conditions. He studies long-range weather forecasts and determines the probable number of Degree Days which will accrue during the coming week.

A rough example of how this long-range scheduling of trucks operates would be as follows:

IF the card of Customer Jones in Zone A-4 indicates he will need another delivery of oil after 500 Degree Days have accumulated, and 400 Degree Days had already accumulated since the last dump, and the forecast indicates that an additional 100 Degree Days will build up by the following Wednesday, this customer is scheduled for delivery on that date. Other Class A customers in the same zone or vicinity needing fuel at the same time are noted. The truck is directed to make deliveries to Customers Brown, Smith and Johnson—as well as Customer Jones—in the same zone on the same day.

Deliveries to Class B and C accounts also are worked into the dispatching of trucks delivering to the "keep-filled" customers (Class A.) For example, if the dispatcher finds he has a Class A delivery to Zone B-6, with no other Class A accounts in the same vicinity needing oil, salesmen call the other types of customers in this area, which records indicate will need oil, and attempt to have them take delivery on the same day the truck is delivering into their zone.

Similarly, if a telephoned order is received from a Class C customer (that is, one who will not accept oil only when he orders it), Degree Day cards are checked for Class A customers ("keep-filled") in the same zone or vicinity who can take oil, so that a full truck load can be delivered while the truck is on the road.

The dispatching system under which the company has placed its truck operations has done away with extreme peaks of delivery, which are an ever-present source of worry to the fuel oil marketer when extremely cold weather strikes, an official of Home Fuel pointed out. Instead of suddenly reaching a sharp peak, the company's deliveries take on more of a gradual hump.

The loading rack at the Passaic plant was designed entirely by officials of Home Fuel. While in many respects it is similar to the two-sided rack installed within the past several years at its deep-water plant at Newark, company officials state that it is a big improvement over the Newark installation, and that many of the problems encountered in operating the latter have been overcome in the Passaic loading system.

Home Fuel was started in 1928 by Joseph Marron, Sr. His son, Louis E. Marron, is president. W. H. Butler is vice-president and general manager and Walter Dette is general sales manager.

Paper Towels Used To Clean Windshields

LOS ANGELES—Small paper towels, colored with orange dye, are now being used as windshield wipers at all Union Oil Co. of California service stations, after a three-months trial at the pump-islands of several Los Angeles stations.

The paper towel is said to be more absorbent, non-scratching yet abrasive enough to remove bugs, free of lint, and stronger when wet than the regular towels used in washrooms.

Attendants claim that the new system speeded up windshield cleaning nearly 25% and that it did a better job of cleaning. These paper towels were also being used a second time to wipe off crank-case dip-sticks and, later, for cleaning up the station and lube departments.

The windshield towel dispensr slips into a bracket that can be attached to the canopy pillar or to the cash-box. It is light and easily removed at night. After use, the soiled towels are thrown into a lower compartment.

YOU BE THE JUDGE

and Let Public Acceptance Be the Jury

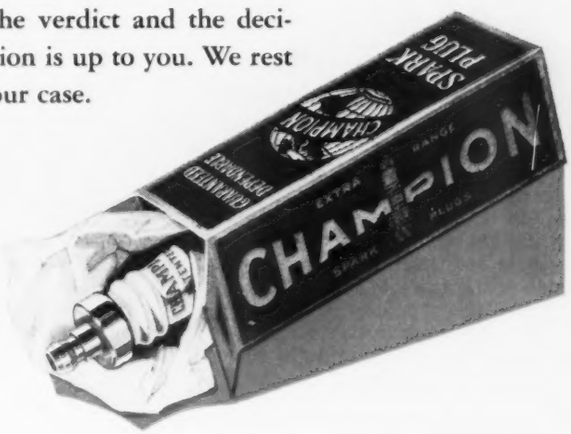
THERE'S PLENTY of truth in that old saying "If a man builds a better mousetrap than his neighbor, the world will beat a path to his door" but first he has to tell the world and keep on telling the world why his product is better and back it up with proof.

Over 30 years ago Champion built their first spark plug and have constantly and continuously improved it ever since. All during this time they have hammered home to the motoring public the fact that Champion Spark Plugs will make every engine a better performing engine. And Champion have backed up their claims by indisputable proof on the dynamometer, in service and in racing—the toughest kind of tests for spark plugs.

This has gained Champion the enviable position of leader in its field, and again Champion can back this up with proof. Brand preference surveys in urban and rural markets show Champion preferred by 60% to 70% of those questioned.

That means Public Acceptance with a capital "P" and a capital "A". That means easier sales for all dealers who stock and sell Champions, for their customers have been pre-sold. That means faster turnover and more profits for all Champion dealers because of the greater percentage of motorists who prefer Champions.

Public Acceptance has rendered the verdict that more motorists prefer Champion Spark Plugs than all the rest of the spark plugs combined. Your honor, you have heard the verdict and the decision is up to you. We rest our case.



CHAMPION

SPARK PLUGS

CHAMPIONS EXCEL AND OUTSELL THROUGHOUT THE WORLD!

Trucking Trends in Middle South:

★ **Hike in Load Limit Permits Use of Safer Equipment**

★ **Roadside Bulk Plants Served by Trucks in Kentucky**

★ **Paying Drivers on "Piece Basis" Proves Successful**

★ **Simple Bookkeeping System Checks Up on Truck Cost**

● NPN's Roving Reporter's assignment was to get the latest developments on trucks in the Middle South. Kentucky-Tennessee to you, sir. It was a pleasant job. A lot of facts of interest to management were developed.

But the process was slow.

A man by the name of Ickes, way up in Washington, was the cause of the delay. Mention has been made of Mr. Ickes once or twice before in NPN.

It seems that the boys in Kentucky-Tennessee have a long memory. They're not vindictive. But you can't kick them around.

So, in visiting jobbers, distributors, major oil companies, oil associations and truck clubs to discuss the assignment, Mr. Ickes first had to be discUSSED. Apparently, back in 1939 "Honest Harold," in his daily lambasting of somebody, said something about wanting to get into an armored truck and bump all the truck drivers from the road.

To mention trucks to these gentlemen immediately brings the subject up for review. They still wonder why a man sitting in one of the "seats of the mighty" in Washington should turn loose a Donald Duck quack-quack at humble, hard-working men who make their living by driving trucks.

But after relegating "His High Highness" to the limbo of "evil old men" a lot of interesting facts were found in regard to oil company truck operations in Kentucky and Tennessee. Following the trucks in Kentucky uncovered interesting developments on roadside bulk plants served by the trucks.

Raising the truck load limit in Tennessee in March, 1939, brought about interesting results as far as the oil industry is concerned.

The limit was raised from 18,000 to 24,000 pounds, helping the marketers, the state of Tennessee and the motorists. It might have helped the railroads, even though they reduced their rates as a result. Reduced rail rates slowed down the trend to transport operations and stopped a lot of business from slipping through the rail-railroads' fingers.

Railroads in determining what rates are necessary in any territory, endeavor to ascertain actual truck costs. It naturally follows that where states, such as Kentucky and Tennessee, have low maximum load limits, the trucking costs are higher than in states, like Ohio for instance, where the load limits are greater.

Some years ago the carriers operating in Tennessee established oil rates up to approximately 150 miles. These rates were lower than prescribed by the Interstate Commerce Commission, which we will call the normal scale. These rates were designed to meet the truck cost when the maximum load limit was 18,000 pounds. In order to meet the situation brought about by increased 24,000-pound load limit in Tennessee, a further reduction was made in the rail rates for application to Tennessee intrastate traffic.

Below is shown (A) normal ICC prescribed rates for various distances up to 150 miles and (B), the present Tennessee truck scale for application on rail hauls:

Miles	Cents per 100 lbs. (A) Normal Scale (Rail)	(B) Tennessee Truck Scale (Rail)
5	11	4
25	15	4
50	20	7½
75	24	11
100	28	14½
125	31	19
150	32	22

The present Tennessee rates are from approximately 33% to 66% lower than the normal basis.

The fact that the railroads lowered their rates to the present scale indicates that they must make money on these rates. If they didn't they wouldn't put them in effect.

With the reduction in rates by the railroads, the trend, as is the case in Kentucky with its 18,000 pounds load limit, of transporting by truck slowed down.

With the change, better, safer more modern trucks, tanks and equipment were purchased for use in delivering from bulk plants to dealers.

The State of Tennessee is the gainer, because cheaper operations by oil companies means greater competition. And keen competition means gasoline for less money—certainly no advance. And the cheaper the gasoline, the more is used by Tennessee's motorists. And every gallon sold means 7c State Tax, not to mention an inspection fee of .4c per gal.

There is still considerable truck transporting done in Tennessee by some of the big marketers, particularly those owning water terminals. But it has not been done to the extent that it has in Kentucky, where the load limit of 18,000 pounds is among the lowest of any of the 48 states.

WITH the raise in weight limit in Tennessee, tank capacities in most cases were brought to 2000 gals. The greatest change to be noted, however, is the addition of safety features, such as better bumpers, skirting, heavier tires, the carrying of a spare tire and other features. This all promotes safety and more efficient operation, which jobbers consider as important as extra gallonage that might be hauled.

The load limits in Indiana, Ohio and West Virginia and most other northern states are higher than in Kentucky and Tennessee. Load limits south of these states in Virginia, Alabama, North Carolina, South Carolina, Georgia and Mississippi are higher than in Kentucky and Tennessee.

This results in a bottleneck, or what might be considered the center of an hour glass. The Interstate Commerce Commission has before it now for consideration the question of establishing load limits on interstate traffic. This when established, will take precedence

over intrastate regulations on interstate traffic.

Today, low load limits in Kentucky and Tennessee prevent the free flow of traffic from the North to the South and from the South to the North.

Oil men in both Kentucky and Tennessee are of the opinion that this is detrimental and contrary to the present national defense program. Marketers in both Kentucky and Tennessee feel that action should be taken promptly to remove the load limit obstacle in Kentucky and Tennessee, which prevents movement by truck of petroleum products between North and South.

In Kentucky, the Hatfield-McCoy squabble is history. But the fight over Kentucky's existing 1938 Motor Vehicle Regulatory Act continues. This industrial feud between the railroads and truckers surpasses the old time blood feuds. Perhaps it goes back to the Civil War days, when the Louisville and Nashville railroad attempted to be neutral and do business with both the North and South. The Confederate military seized the southern terminal and the L. & N. came out second best.

Every session of the Kentucky legislature finds a bitter battle between the railroads and the Kentucky motor carriers. To date, it has been the railroads' game from the first to the 19th hole.

According to Lew Ullrich, managing director of the Motor Truck Club of Kentucky, his 5 lobbyists were no match for the 55 sent to the state capital by the railroad interests in the last session.

More Roadside Bulk Plants Spring Up in Kentucky

● Two or three years ago there was a song entitled "I Can Get Along Without You Very Well."

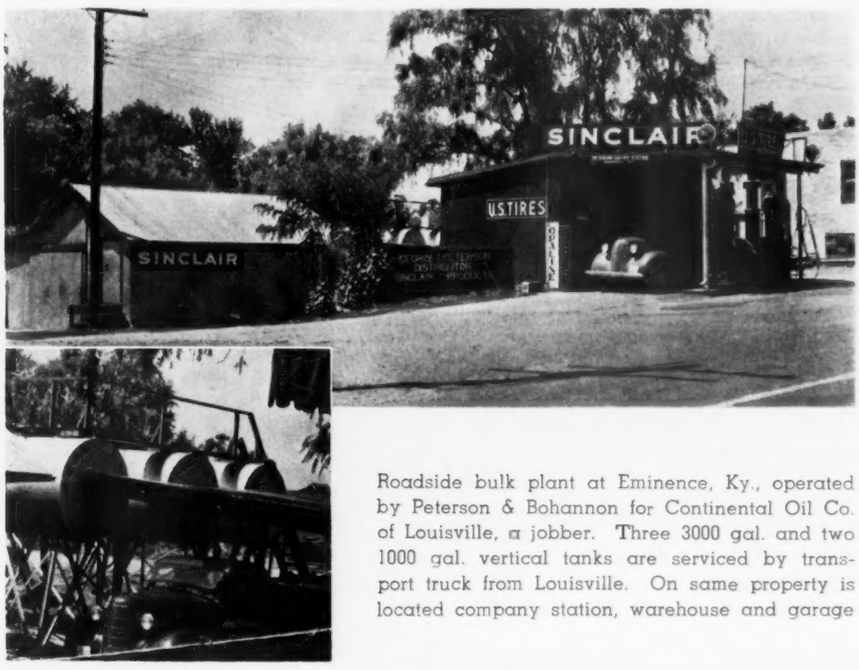
Judging from the extent that truck bulk plant operations are increasing in Kentucky, oil marketers will soon be in position to broadcast that little ditty to the railroads and mean it.

An observer who traveled Kentucky highways 2 years ago, or even 1 year ago, would be surprised how rapidly these plants are springing up along highways.

Those companies which first tried the plan as an experiment are making definite programs for building more truck bulk plants, because they found that it pays. The development of water terminals has been a big factor. But being able to operate more economically by this method than by tank cars and expensive tank car bulk plants is of course the main reason.

Thus, some time in the future when Kentucky's 18,000 pound weight limit on trucks is raised and the railroads in turn reduce their intrastate rates, as was done in Tennessee, the rails will find themselves up against a well-organized efficient system of truck delivery difficult to buck.

The accompanying sketch and photograph shows the plans of one of the latest of these plants built in southern Kentucky by one of Kentucky's largest distributors at a cost slightly less than $1500. Future plants like it are being planned. The only difference will be that instead of 1500-gal. tanks they will have three 2000 gal.—and in some cases four 2000 gal.—tanks.



Roadside bulk plant at Eminence, Ky., operated by Peterson & Bohannon for Continental Oil Co. of Louisville, a jobber. Three 3000 gal. and two 1000 gal. vertical tanks are serviced by transport truck from Louisville. On same property is located company station, warehouse and garage

As will be seen, this plant is on a lot adjoining a company service station. It is on leased ground with a short term renewable lease. The picture shows a combination warehouse and garage. In this particular station, it will be noted that living quarters are provided in the station for the operator; but that is not a regular custom.

The operator of the station can keep an eye on the plant for the commission agent who makes deliveries from the plant on the company's regular commission basis.

Deliveries to the plant are made from a river terminal in Henderson, Ky. (a distance of 90 miles) by means of tractor trailers with tanks of 1500-gal. capacity.

Small 0.5 horsepower motors—explosion proof—are on each pumping unit. Motors are 110 volt, single phase 60 cycle type. The pump has a 1.5 in. opening. It operates off the electric power line but the same type of plant could be used with diesel or gasoline powered generator.

FIGURES are not available as to actual cost of operation on this type of small bulk plant. After considering investment, the smaller amount of inventory, the virtually no overhead on such a plant, its practical mobility against the cost of large tank car storage bulk plants, it is understood why these small units are growing.

One small jobber now has plans for building 4 additional plants in southern Kentucky similar to this set-up.

A pioneer in this business was the Continental Oil Co. of Louisville, an independent jobbing company of which Clarence Bauer is president. Mr. Bauer after watching the operation of his plants in LaGrange, Eminence and Carrollton, is more convinced than ever that this is the only way to operate. He, too, expects to extend the operation of these truck bulk plants as his business continues to expand.

Typical of this company's plants is the one shown in the accompanying picture located at Eminence, about 45 miles from Louisville.

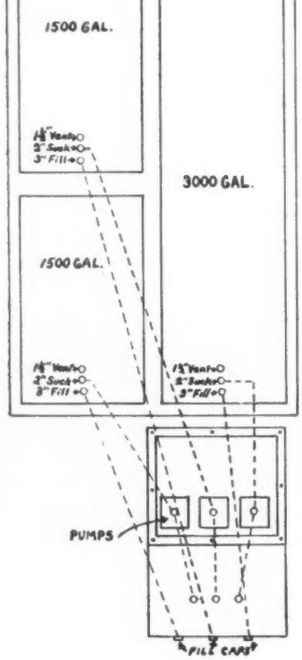
At that plant are 5 vertical tanks: 2 for regular gasoline and 1 for kerosine and two 100-gal. tanks—one for Ethyl and one for third grade gasoline.

The plant is complete with storage garage, warehouse and a service station adjoining. The station is said to be the largest gallonage outlet in the county.

The plant and station is operated by commission agents at Eminence, who also operate the station on a third party arrangement.

As in the case of most of the road-

"Pewee type" bulk plants are proving an economical and efficient marketing aid for Kentucky marketers. Plant shown here, with ground plan, is one of many operated by the Aetna Oil Co. of Louisville. Costing less than $1500, it is located next to a company station. Gasoline is delivered to plant by transport and in turn delivered locally by the small truck shown here. Diagram of Storage tanks is shown below



side bulk plants, deliveries are made from a water terminal. In this case, it is from Continental's river terminal in Louisville.

Mr. Bauer points out that, in addition to other advantages of such a plant, the commission agents, during cold weather or "slack times," can do their own trucking. In that event, a small additional allowance would be made them.

While no statistics are available as to the number of these roadside plants in operation in Kentucky, their growth is steadily increasing. This is particularly true of the smaller jobbers and distributors. However, most of the major companies are operating a few such plants. One major is now scouting for many additional locations.

A composite picture of a Kentucky roadside bulk plant would look something like this.

Average storage: 10,000 gals.
Average cost: $2000.
Average tank capacity: 4—2000 gal. tanks.
Location: Next to service station.
Lease: Five year—with renewable privilege.
Operation: Regular commission arrangement.
Meters: 2" incoming—2" pump.
Storage: 3 grades gasoline and kerosine. Some plants have fuel oil tank. Bulk storage for lubricating oil, tires and accessories.
Average size of town: 3500.
Average gallonage: 15,000-30,000 monthly.
Trucks: 800-gal. straight jobs.
Average area served: 20 miles.

In selecting locations for truck bulk plants, among factors involved is convenience from the main highway where transport trucks are operating. If possible it is customary to locate on same land with service station. This permits station operator to act as watchman, and in some cases, arrangements are made for him to handle the products being checked in and out.

Exactly the same accounting is used in these operations as would be the case with a large bulk plant. Generally the books and reports are kept at home by the agent. In some cases the operator of the station does the bookkeeping.

There doesn't seem to be any abandonment of trackside bulk plants with the growth of these small plants. In some cases, as is the case at LaGrange, Ky., plants alongside the highway on railroad spurs have been converted over to truck transport plants. Either method of securing supplies could be used.

Why these truck bulk plants have such a good start in Kentucky and are so little used in other states may be due to the logical development of large water terminals. It may be that it just happened to start in Kentucky and was found profitable and is spreading. A number of plants of this kind may be seen in Indiana, and others are being planned.

Drivers Paid on 'Piece Basis', Helps Safety and Efficiency

● One independent oil company operating more than 30 trucks in Kentucky and southern Indiana has developed a "piece basis" system of compensation for drivers.

To work this out, the company first made a thorough study of delivery operations, the drivers reports showing for each trip:

1. Loading time
2. Running time, loaded
3. Unloading time
4. Running time, empty
5. Idle time
   a. Due to road failures
   b. Due to shop repairs
   c. Due to miscellaneous causes such as drivers lunch, roads blocked, and so on.

From the company repair shop, the company received a report giving the time the unit was in shop for any reason. This gave a record of time actually spent on repairs and also idle time in the shop. Drivers and shop were required to account for a full 24 hours each day for each unit.

This record has no bearing on

drivers' rates of pay. It indicates how thoroughly this progressive marketer kept track of every item of non-productive time, which in turn was studied and eliminated or decreased where possible. The record showed how long each unit waited before work was started; how long the work required; and how long after work was completed before a driver was assigned to use the unit.

The time study was made during 3 months of winter driving, then 3 months of summer driving. This gave a complete time study on almost 2000 trips, and enabled the company to get good averages of all the various items.

As each trip always involves loading and unloading, these 2 average times were added together. The company, then knowing the rate it wanted the average driver to get, was able to set a flat amount of pay for those 2 operations.

Using a combination average running time loaded, average running time empty and average idle time per 100 miles, while the unit was in the drivers possession (due to no fault of the driver) and again knowing the rate they wanted the driver to make, a mileage rate was determined.

The fixed rate for a delivery to any given point then is set thus:

Allowance for loading and unloading	$ .75
Miles to point times mileage rate (assume 100 miles and 4c per mile)	4.00
	4.75

Even though the drivers do not come under the jurisdiction of the wage and hour law, the company following the spirit of that law permits only so many hours of work per week. The drivers, therefore, have every incentive to get in as many trips within a limited number of hours as possible. With no limit on hours, they could loaf on the job and still make as much money, even though total time on the job would be longer.

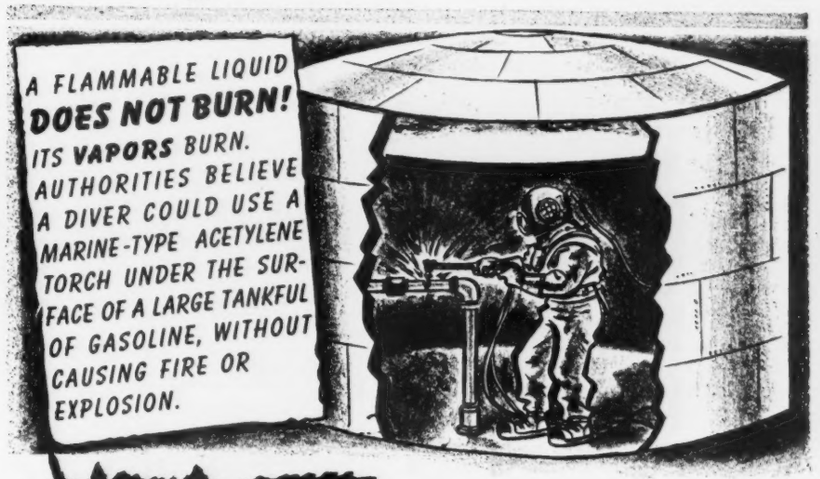
Under this system, drivers have a definite incentive to save time at every step in the delivery operation.

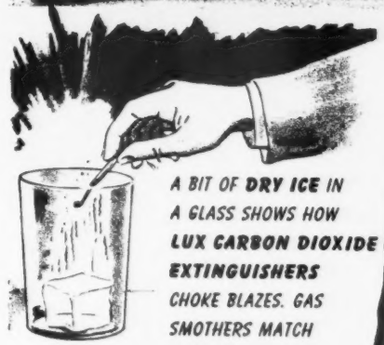
1. They have reason to help with and expedite loading and unloading. To report for correction every condition affecting efficiency of these operations whether it has to do with personnel or equipment.

2. They have reason to make as fast running time as possible. But the danger of that is kept under control by the following means:

   a. Speed laws and their enforcement.
   b. Safety and the hazard of reckless driving are hammered home at every opportunity in meetings and in instructions.
   c. A safety bonus of $10 is paid each driver each month if he has had no accidents. A minor ("at fault") accident loses the driver $5; a major ("at fault") accident loses him the full $10. Too frequent accidents means discharge

Strange Facts about Fire!


A FLAMMABLE LIQUID
DOES NOT BURN!
ITS VAPORS BURN.
AUTHORITIES BELIEVE A DIVER COULD USE A MARINE-TYPE ACETYLENE TORCH UNDER THE SURFACE OF A LARGE TANKFUL OF GASOLINE, WITHOUT CAUSING FIRE OR EXPLOSION.



YOU SAVE MAINTENANCE DOLLARS WITH LUX EXTINGUISHERS. NO ANNUAL RE-CHARGING. JUST WEIGH LUX CYLINDERS TO CHECK IF ACCIDENTALLY DISCHARGED.

CONFLAGRATIONS CAUSE SUCH TERRIFIC DRAFTS THAT PEOPLE NEARBY REPORT HIGH WINDS, EVEN THOUGH AIR IS ACTUALLY CALM, WINDLESS, A FEW MILES AWAY.
(FROM HANDBOOK OF NATIONAL FIRE PROTECTION ASS'N.)

Think what fire can do in your pump-house, or at your loading rack. Think how a blaze can cripple distribution. Then start thinking about your fire protection.

Flammable liquids are your business. So, get LUX carbon dioxide extinguishers... one of the fastest, most effective of all weapons against flammable liquids. A blast of carbon dioxide snow-and-gas hits these fires with a real flame-killing wallop.

LUX *portables* handle 9 fires out of 10. For serious concentrated fire hazards, look into LUX *Built-In Systems* where a battery of LUX cylinders is piped directly to the danger zone. Automatic or manually controlled.

Trigger control extinguishing features Kidde-LUX Model Two. Aim at the blaze ...pull trigger... fire's out! Get this new Kidde-LUX in your plant.

Don't delay on fire protection. Guard against every move fire can make. Send the coupon right now.

Walter Kidde & Company, Inc.
929 West Street, Bloomfield, N. J.

Send me "Don't Play With Fire." I understand it describes the new Kidde-LUX as well as other LUX extinguishers.

Name_____

Company_____

Address_____

or transfer to other type of work. A committee of the drivers' immediate superior and two drivers investigate and reach a decision on each accident. The drivers "rotate" on the safety committee.

d. They have reason to make minor repairs on the road where possible, rather than lose time calling for and waiting for a service man. If the required repair cannot be made by the driver, he has every reason to hurry getting help and to assist the service man in making the repair.

e. They have reason to inspect the unit carefully before each trip and to obtain any needed service before starting—prevention of breakdown rather than cure.

The safety experience of that company under this plan has improved greatly over previous experience.

On strictly city driving this company's problem in compensating drivers is somewhat different:

1. Distances are much shorter and thus less a factor.
2. Usually several stops are made to dump a load.
3. Sometimes it is necessary to deliver a part truck load on an emergency delivery.

From the time and mileage study on city deliveries, the average miles per trip was determined; the average number of stops to dump a full load; and the average time lost for one reason or another. With these factors the company was able to determine the average time per trip and set a rate for each truck making city deliveries. The rates are set on a per gallon basis. This in addition to being an incentive to take a full load each trip causes the driver to try and get the customer to take larger deliveries. It causes less stops per trip.

IN making city deliveries, one delivery may be within one mile of the plant requiring only 2 miles of driving and the entire dump may be made at one place. Also, another trip may require 20 or 30 miles of driving and require 5 or 6 stops to dump the load. Over a period of a week or a month, however, the trips average out and correct this seeming injustice.

Original rates were deliberately set low by this company because it expected improved performance. The net result of the program has been a definite improvement in performance and a definite increase in drivers remuneration.

Rates are adjusted when and if conditions require it, or when a general pay increase is given throughout the company.

Under this system there is no inducement for the driver to sell. But on transport trucks there need be none. With city drivers the inducement to sell products other than gasoline is the knowledge that as the company prospers they will be taken care of with increased compensation. Frequent contests, combined with a spirit of rivalry between the drivers also promote sales.

This company buys inexpensive units, gives them hard use and trades them in. They run ¾-ton tractors between 200,000 and 250,000 miles then are able to get about 30% of the new cost as a trade-in allowance. During that time they may have used from 4 to 5 factory rebuilt motors.

Varied Types of Trucks Used By Kentucky Oil Marketers

● There is a variance in types of trucks used by Kentucky oil marketing companies.

One of the largest transporters in Kentucky uses high tensile steel tanks. For transport work 1500-gal. capacity tanks are used, semi-trailer units. The transports have from 1 to 3 compartments for one-point delivery. City trucks are equipped with from 6 to 10 compartments for multiple delivery. They are usually 1000 to 1200-gal. straight trucks.

The largest marketer uses aluminum tanks and even aluminum bodies, but does not find aluminum cabs practicable. But that company does not as yet do a great deal of transport delivering. Another of Kentucky's largest refineries uses aluminum exclusively for tanks, bodies and cabs for both transport and city deliveries.

One large Kentucky marketer who keeps accurate records on his delivery costs, states that in Kentucky, with the 18,000 lb. limit the cost is 11c per 1000 gals. per road mile. On the other hand, in the bordering state of Indiana with its more liberal weight limit, the cost is only 8c per 1000 gals. per road mile. These costs are based on single point transport delivery. In Indiana weights are on a basis of 16,000 pounds per axle.

Most city delivery trucks are meter equipped. Transport trucks are not. Meters are usually located at the manifold which may be on the curb side in the rear. Piping is usually 2 in. Both 2.5 and 3 in. are also used to some extent. Very few auxiliary units for fast unloading are to be found.

On the average, one-way transport truck operation is 75 miles. Distances range from 10 to 150 miles.

Careful attention is given to the maintenance of truck equipment. Every marketer of any size has his own repair shops with expert mechanics. Before loading, a careful check is made of the truck. Inspection on return from runs is the general practice. There is always a reserve truck to replace those found in need of repairs. Periodically they are completely overhauled.

Drivers of trucks, as a whole, are extremely courteous, high class men. Most of them wear the same type of uniforms as used in their company's service stations. A few companies have developed special uniforms for their truck operators, and are bought at wholesale prices. In winter, puttees are used.

'Fact Book' Checks on Trucking Cost

● W. T. Davis, executive vice-president of the Aetna Oil Co., Louisville, considers the system that his company uses in connection with records on truck operations so important that he personally supervises its maintenance.

It was developed by Mr. Davis about 15 years ago. This executive estimates that a minimum of 10% can be saved on truck operations by making intelligent use of the information supplied by complete records.

For lack of a better name it is simply called a "fact book." These transportation "fact books" are used in deciding when to trade in transportation units. They give costs of maintenance and oil consumption, and acting also as a complete service record on each piece of equipment.

Miscellaneous data on each unit is recorded on a 9¾" x 11" ledger sheet. Shown on this page are column headings of these sheets, indicating what data is kept on each sheet. The information is obtained from drivers' report forms and from the repair shop records. An entire set of 24 sheets is kept on each unit for the entire time it is in service, and is taken care of by a clerk who also keeps "fact books" on service stations, bulk plants and other operations.

Any bookkeeper can easily install a similar system from this data, either in its complete form or a modification to meet any marketers' particular truck operations.

Detailed information is shown on page 37.

Headings for Ledger Columns In 'Fact Book' on Truck Cost

On this page are shown the column headings for ledger pages, used by a Kentucky oil marketer (see Page 36) to keep a check on operations and costs of each of his trucks. Ledger pages below are arranged in order; column headings are given for the first page, with other pages following in order. There are 24 pages but marketers can decide for themselves whether or not all of this data is needed in their own operations.

Miscellaneous Data—Monthly & To Date
Operating Data
Delivery & Garage Depts. Unit No. 32

Year	Miles		Gallons Delivered			Gals. Gas Used	
	Monthly	To Date	Monthly	To Date		Monthly	To Date

Miscellaneous Data—Monthly & To Date
Operating Data
Delivery & Garage Depts. Unit No. 32

Gals. Oil Used		Lbs. Grease Used		Trips		Stops	
Monthly	To Date	Monthly	To Date	Monthly	To Date	Monthly	To Date

Time Record—Monthly
Operating Data
Delivery & Garage Depts. Unit No. 32

Year	Running				Idle		
	Loading	Unloading	Loaded	Empty	On Road	In Garage	

Time Record—Monthly
Operating Data
Delivery & Garage Depts. Unit No. 32

In Shop		Road Failures				
Repairs	Waiting	Number	Repairs	Waiting	Misc.	Total

Controllable
Expense
Delivery & Garage Depts. Unit No. 32

Year			Other			
	Supervision	Acct.	Salaries		Rep. Labor	Rep. Mat.

Controllable
Expense
Delivery & Garage Depts. Unit No. 32

Outside Repairs	Travelling Expense		Tel. & Tel.	P.P. & S.	

Controllable
Expense
Delivery & Garage Depts. Unit No. 32

Year				To Date	
	Oil, Grease & Gas Used	Tires		Oil, Grease & Gas Used	Tires

Controllable & Fixed
Expense
Delivery & Garage Depts. Unit No. 32

		Total Controllable Exp.				
	Misc.	Monthly	To Date		Rentals	Insurance

Fixed & No Cash
Expenses
Delivery & Garage Depts. Unit No. 32

Year	Total Fixed Expense					Total No Cash	
	License & Taxes	Monthly	To Date		Depre.	Monthly	To Date

Interdepartmental Credit
Gross Profits
Delivery & Garage Depts. Unit No. 32

	Interdepartmental Credit	

Expense Total Profit or Loss
Gr. Profits, Expense, Totals P. or Loss
Delivery & Garage Depts. Unit No. 32

Year	Total Cash Expense		Grand Total Expense		Cash Profit or Loss		Net Profit or L.	
	Monthly	To Date	Monthly	To Date	Monthly	To Date	Monthly	To Date

Total Wages—Repairs—Misc. Expense
Expense Totals
Delivery & Garage Depts. Unit No. 32

	Total Wages		Total Repairs		Total Misc. Exp.		
	Monthly	To Date	Monthly	To Date	Monthly	To Date	

Costs Per Mile—Monthly
Operation Analysis
Delivery & Garage Depts. Unit No. 32

Year	Wages	Repairs	Gas, Oil & Grease	Tires	Misc.	Total

Costs Per Mile—Monthly
Operation Analysis
Delivery & Garage Depts. Unit No. 32

Total Fixed	Total No Cash		Grand Total Expense

Costs Per Mile—To Date
Operation Analysis
Delivery & Garage Depts. Unit No. 32

Year	Wages	Repairs	Gas, Oil & Grease	Tires	Misc.	Total

Costs Per Mile—To Date
Operation Analysis
Delivery & Garage Depts. Unit No. 32

Total Fixed	Total No Cash		Grand Total Expense

Costs Per Gallon—Monthly
Operation Analysis
Delivery & Garage Depts. Unit No. 32

Year	Wages	Repairs	Gas, Oil & Grease	Tires	Misc.	Total

Costs Per Gallon—Monthly
Operation Analysis
Delivery & Garage Depts. Unit No. 32

Total Fixed	Total No Cash		Grand Total Expense

Costs Per Gallon—To Date
Operation Analysis
Delivery & Garage Depts. Unit No. 32

Year	Wages	Repairs	Gas, Oil & Grease	Tires	Misc.	Total

Costs Per Gallon—To Date
Operation Analysis
Delivery & Garage Depts. Unit No. 32

Total Fixed	Total No Cash		Grand Total Expense

Time Analysis—Monthly
Operation Analysis
Delivery & Garage Depts. Unit No. 32

Year	Running				Idle		
	Loading	Unloading	Loaded	Empty	On Road	In Garage	

Time Analysis—Monthly
Operation Analysis
Delivery & Garage Depts. Unit No. 32

In Shop		Road Failures				
Repairs	Waiting	Number	Repairs	Waiting	Misc.	Total

Miscellaneous Analysis—Monthly & To Date
Operation Analysis
Delivery & Garage Depts. Unit No. 32

Year	Av. Miles Per Hour		Loaded Miles Per Hr.		Empty Miles Per Hr.		Av. Miles Per Trip	
	Monthly	To Date	Monthly	To Date	Monthly	To Date	Monthly	To Date

Miscellaneous Analysis—Monthly & To Date
Operation Analysis
Delivery & Garage Depts. Unit No. 32

Miles Per Gal. Gas		Miles Per Gal. Oil		Av. Time of Loading		Av. Time of Unloading	
Monthly	To Date	Monthly	To Date	Monthly	To Date	Monthly	To Date

Are you one? . . .

the *"waiter"*	*the* *"borrower"*	*the* *"no timer"*
—he misses the live news each week by waiting for the office copy of NPN to finally get around to his desk!	—he generally borrows some one else's copy of NPN, but frequently either misses the latest news or reads it weeks later!	—he has no time to read during his rushed office hours and misses NPN's live information by not getting a *home* copy!

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Tennessee Marketer Builds Office With Savings on Maintenance

● Here's the office that service station maintenance built!

It's the new home of the American Oil Co., of Tennessee, at Nashville, of which G. B. Dickey is president and general manager. Mr. Dickey is also president of the Tennessee Oil Men's Assn.

This 30 x 20 foot glistening white concrete cinder and glass block building hits you in the eye like a skyscraper would in the desert. It adjoins the company's warehouse, garage and repair shop.

On the same property, on Charlotte Avenue, is one of the company's stations. This station, while not new, is so spic and span that it blends in with the general effect of modernization carried out through the entire layout of American's headquarters. Like all of the company's stations—there are more than 30—everything new and modern for the servicing of automobiles is to be found. A battery of the latest type lubrication equipment was recently added to the station.

One of the company's stations at Nineteenth Ave., and Church St. is being operated by Gilbert B. Dickey, Jr. Young Dickey is supplementing his allowance by operating this station while attending the law schooi at Vanderbilt. He proudly points out that his station is so clean that lunch could be served on the floor.

But of more interest to NPN readers is young Dickey's system of geting oil drain and lubrication business. It started while he borrowed his Dad's copy of NPN, memorizing the selling highlights in the "FOR SAFETY'S SAKE, LUBRICATE EVERY THOUSAND MILES" campaign this summer and requiring his helpers to do the same.

Later the plan was adopted by American's entire organization.

As of August 17 Mr. Dickey reports oil drains up 25% since the start of the campaign.

For those interested in appearance of the office, the accompanying sketch will show the efficiency of the building. But for those who like beauty as well as efficiency, this building also fills the bill to a "teagh."

First, the modernistic effect is carried through the entire structure from the entrance to the latest type gas heating furnace in the basement. The hot air furnace is controlled by a thermostat.

THE most striking and unusual feature of the building is the floor. By expert blending of a combination of colors, the 12 x 12-inch cement tile blocks which cover the entire floor give the appearance of being the most expensive natural dark-colored marble. These blocks contain reinforced steel and are installed directly on concrete joists. They are easily cleaned, do not show oil tracks, are fireproof and, unlike ordinary cement, are said to retain their heat.

Another striking feature of the office is the walls. They, too, are built with an eye for beauty, but also an occasional greasy hand. The ceilings and walls are white down to 66 inches. From the floor to this point is native stained pine No. 1 ship lap. These 11-inch boards are placed horizontally.

In the general office, there is a built-in high counter used for checking in drivers. The counter contains shelves for storage of company records and stationery.

And how did Service Station maintenance build this modern office?

Simply by Mr. Dickey's policy that drivers be mechanics. Before a man can take over a truck route, he is trained in the repair shop and outside to service and repair equipment. They graduate from shop mechanic to driver, and take care of all except major repairs.

Prospective drivers are first given a complete training in pump repairing and maintenance. They work in the bulk plant repair shop and outside until they are considered capable of doing a first-class job. Then they are graduated to "driver-mechanics" and furnished tools to keep the equipment in shape.

Knowing that constant inspections when making deliveries prevent maintenance jobs, the work is held to a minimum. The equipment is always in good shape.

Some jobbers will say the system won't work. Perhaps it won't in some cases. But it does here. And the American Oil Co. of Tennessee is one of the most successful jobbers in one of the toughest states in which to do business.

Anyway, here is the office that service station maintenance built. And if that 25% increase in oil drains continues "doorknobs of gold" may be the next improvement.

New Division Organized By Tank Company

Lloyd K. Wells, East Chicago, Ind., has been appointed manager of the general construction division of the Graver Tank & Manufacturing Co., it was announced recently. This division was organized to construct equipment and other facilities for the petroleum industry, the announcement stated.

Organized as a separate erecting department, work in the division will be confined to plans and specifications furnished by the customer, with no engineering or designing work undertaken.

Mr. Wells counts many oil men among his friends, in that he has had considerable experience in the erection of all types of equipment and construction, it is stated.

Indiana Standard Boosts Sale of Christmas Candles

Orders, 100,000 strong, for Christmas candles were received last year from stockholders of Standard Oil Co. of Indiana, who were offered candles at cost at time of Sept. 15 dividend check.

The same offer is being repeated this year. A descriptive folder tells of 2 kinds of candles and states that this offer is made to stockholders at approximate cost.

'Advertising Donation' Racket Hits Oil Companies, Big and Little

IS THERE a solution to the "advertising donation racket," which costs the oil industry millions of dollars a year?

If there is, treasurers, advertising managers and other oil company officials having to do with saving money, yet spending it where it will do the most good, will probably increase their life span.

First, take an average major oil company marketer in a fairly large city. How does the donation racket affect him when one of his best fleet customers is appointed on the advertising committee for the annual truck drivers' ball? When this good customer corners him for a $25 or $50 space in the program, knowing full well that all the other marketers will be represented, does he turn down the request? He pays across the board, and while he may not like it, he pays.

And when Johnny asks for an "ad" in the High School annual, because Johnny's Daddy is another good customer, he comes across again.

And he pays for the church program, the Club picnic, the card in the Army organization paper, the Union publication. He helps the boys buy baseball suits and he matches space with other marketers in special editions.

At the time, there is always a good reason for buying space or making donations, but he knows that, collectively, 95% of the "forced advertising" might just as well have been spent in Hong Kong. He's progressive; believes in advertising and was undoubtedly influenced by his company's national and oil journal advertising in taking on the line.

He would like to cooperate with his company's splendid national campaign, with a consistent local campaign of his own. He has learned that hit and miss advertising is not much good, and he knows that his supplier would gladly have one of its experts prepare a local tie-in program, which would make money for them both. But he can't do it. There's only so much money for advertising, and the "donation racketeers" get it one way or the other.

A slightly different picture appplies to marketers in smaller communities. They are not called on to go into so many projects—and it doesn't run into much money to keep their names before the local people. The big problem lies in the larger communities and cities, with local marketers and refiners, particularly the headquarters of the smaller independent companies, where professional telephone solicitors, expert salesmen, friends, fellow club, lodge and organization members—and plain crooks—are after the company's money day and night.

Next, let's take a medium sized refinery with its main office in a fairly large city. It spends a sizable sum each year on what it considers good legitimate advertising. In the fall, when the appropriations are made up, the advertising manager presents to the management what he thinks is a budget that will do an excellent job. Usually the budget is trimmed, sometimes to a point where every penny of the appropriation must be carefully watched in order to stay within it. Somewhere in the figures is an item of "good will' or perhaps plain "donations." This is most generally cut to the bone and management vows there won't be a single "donation" next year —except a few minimum "must" items.

Shortly after the New Year the sales manager decides that after all it might be a good idea to buy a $75 space in Joe Blunk's program—for after all Joe does control a lot of business. So a $75 commitment is made against the "donation" account and the merry whirl begins. Sometimes space is bought on account of threats, occasionally in weak moments. Friends of the "big boss" put the pressure on him; the advertising manager grits his teeth and decides that perhaps the new salesman's portfolio doesn't have to be so elaborate after all, and that those sales helps will just have to wait until next year. New rackets are brought in the picture, such as this one:

A long distance call comes in for the manager from a nearby town where the company has a bulk plant and a few stations. A girl with the well-known "telephone voice" sweetly tells him that she would like to read a write-up in the local paper concerning his company to insure it being accurate. "I know you will be glad to see it, and we will send you a copy of the paper when it comes out," she tells him. The copy is usually OKd as it is.

Soon along comes the paper, marked for the personal attention of the manager. The "story" is one of many covering one or two pages, with similar write-ups about most every other business enterprise in the town. And there is a $25 statement along with the paper. If the manager doesn't feel too silly, and argues the matter, investigation will reveal the local paper is only a tool of racketeers and to keep the town's good will the bill is paid anyway. This is not an extreme case, and it shows how smaller oil companies are often forced to sacrifice things they would like to do for their dealers and salesmen and agents, simply because they don't know how to get out of giving these donations.

Now comes the major oil company problem. They are spending their money in various forms of national advertising. They buy it in wholesale lots and certainly can't buy it piecemeal. They are not particularly interested if Aunt Minnie does get turned down on "ads" for fans for her missionary society.

But national advertisers are paying their toll just the same, for they are losing a lot of good advertising their distributors would do if they didn't have to put their advertising money into donation rackets. It's no trick to ignore or turn down the requests that come in by mail. But it's not so pleasant to get a report from a division manager that a local marketer in Jonestown isn't feeling so good toward the company, because it didn't donate a banner for the parade that advertised a new overall factory the Chamber of Commerce was working on. Some of the oil companies, and one of the largest majors in particular, provide their division managers with a very small "slush fund" for these kind of emergencies, and when it's gone, there is no more. It is charged to sales expense and not advertising.

NEXT in the racket—and the one least able to stand it—are the station operators and dealers. The minute a committee goes out to raise funds, or sell a program—or an outside racket comes to town—a bee line is made for the service stations. The average station has a hundred or more customers and a big part of them some time during the year are involved in some kind of "advertising scheme." One bunch of operators in a southern city paid out $250 in one day for space in a coast-to-coast directory being prepared by a so-called national transportation system that said it was going to fill ten trucks per day at the local stations.

If there is a solution to the donation problem, it would seem that the system followed by the Retail Merchants Assn. of one large city could be used as a model. Their system works; it has teeth in it—and not a single member has spent a dime on this kind of publicity for several years. The advertising solicitors know it, and they can't get

mad, because all the representative retail and department stores are members. Requests for "advertising" or "donations" are simply referred to the association. That is, unless the solicitors are first stopped by the sign in the reception room saying that no donations are given unless the project has been approved by the association. And this sign usually stops them.

In many large cities, the Chamber of Commerce or Better Business Bureau has a committee that investigates the project for which "advertising donations" are being sought, finds out how much of the "take" goes to the solicitor as "commission" and then issues a bulletin to local business men. This bulletin reports on background of the solicitor and how much is actually going to the organization in whose name he is soliciting. Business men can then make up their minds individually whether or not they want to contribute when the solicitor calls.

National Oil Burner Progress Exhibition To Be Held March 17-22 at Philadelphia

N. P. N. News Bureau

NEW YORK—The National Oil Burner Progress Exhibition, sponsored by Oil Burner Institute, will be held at the Commercial Museum, Philadelphia, March 17-22, O. B. I. has announced.

The exhibition will be open and free to the public, and is the first national oil burner show since 1937.

Keynote of the exhibition will be "progress", and in announcing the show, Ray G. Whipple, president of O. B. I. said: "The time (for the show) is most propitious, for today our National Defense Program—which we are preparing to defend—is to preserve our American progress of which oil burner progress is part and parcel. The accent is on the home as never before. American ideals and institutions revolve about the home. Over 2,000,000 are centrally heated oil burning homes and the number mounts at the rate of 300,000 annually. These impressive figures do not include the hundreds of thousands of users of range oil burners, space heaters or hot water heating units. Nor do they touch upon commercial and industrial oil burners, 200,000 of which are installed through the United States."

The name, "National Oil Burner Progress Exhibition," was developed from submissions offered by Lillian C. Perillo, 84 Park Ave., Summit, N. J., and Hazel E. Mansfield, 46 Douglas Street, Springfield, Mass. The $50 prize for naming the show was divided between the two women.

TRADEMARKS

The following are trademark applications pertinent to our field pending in the United States Patent Office which have been passed for publication and are in line for early registration unless opposition is filed promptly. For further information address National Trade-Mark Company, Munsey Building, Washington, D. C., trademark specialists.

DURATEX, Ser. No. 420,029, I. Mayer Strauss, doing business as Admiral Products Co., Maspeth, Long Island, N. Y. Filed: May 31, 1939. For lubricating oils and greases for motor vehicles, hydraulic brake oils, crank case oils, shock-absorber oils, and penetrating lubricating oils. Published: Aug. 6, 1940

CRITERION, Ser. No. 432,024, Columbia Bedford Corporation, Long Island City, New York. Filed: May 17, 1940. For motor lubricating oils. Published: Aug. 6, 1940.

TALPA, Ser. No. 432,658, Shell Oil Company, Incorporated, St. Louis, Missouri. Filed: June 4, 1940. For lubricating oils and greases. Published: Aug. 6, 1940.

TALPEX, Shell Oil Company, Incorporated, St. Louis, Missouri, Ser. No. 432,659. Filed: June 4, 1940. For lubricating oils and greases. Published: Aug. 6, 1940.

CORNTROL, Ser. No. 433,364, Stanco Incorporated, Wilmington, Delaware and New York City, N. Y. Filed: June 25, 1940. For insecticides. Published: Aug. 6, 1940.

MOTOR LIFE, Ser. No. 432,813, Famous Lubricants, Inc., Chicago, Illinois. Filed: June 8, 1940. For lubricating fluid. Published: Aug. 6, 1940.

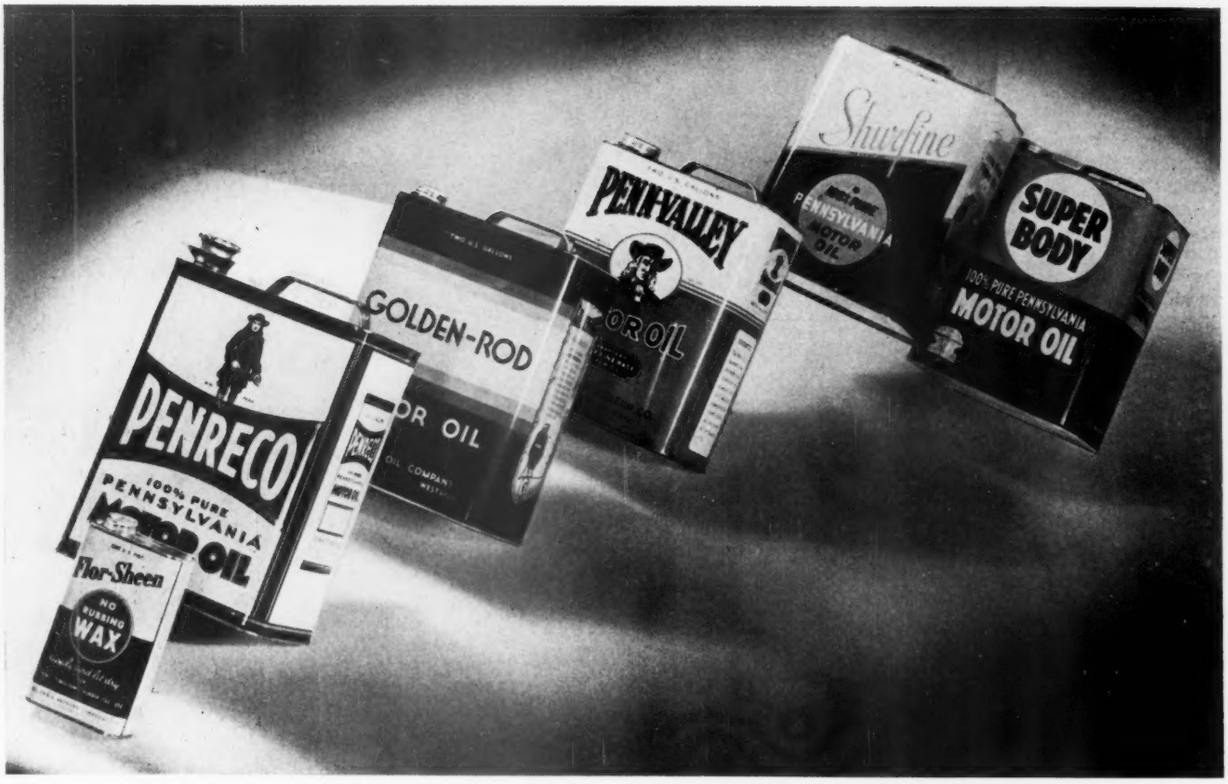
CARGO, Ser. No. 433,095, Fleet Oil Co., La Follette, Tennessee. Filed: June 17, 1940. For gasoline and lubricating oils and greases. Published: Aug. 6, 1940.

GREEN STAR, Ser. No. 431,741, Roosevelt Oil Company, Mount Pleasant, Michigan. Filed: May 9, 1940.

For petroleum and products of petroleum with or without admixture of other materials, for illuminating, heating, power generating, burning, lubricating, greasing, tempering, quenching, slushing and flushing; paraffine; road-dressing oil; mineral wax; candles; absorbing oil for benzol vapors obtained in the distillation of coal; naphtha; kerosine; petroleum distillate for engine fuel, benzine; gasoline. Published: August 13, 1940.

TIOGA and representation of head of Indian, Ser. No. 429,867, The Petroleum Products Co., Chanute, Kans. Filed: March 22, 1940. For motor fuel oils, particularly gasoline. Pub.: Aug. 20, 1940.

GET READY before
WINTER'S BLITZKRIEG!
I'LL TRY THIS HOT WATER BOTTLE!
STIFF OIL DRAINED MY BATTERY FLAT!
MY OIL ISN'T PUMPING!
WHAT A GEYSER!
LUBRICATION
MY GEARS ARE FROZEN STIFF!
AM I SMART—I CHANGED EARLY!
BANG IT—WHY DIDN'T I PUT IN WINTER OIL YESTERDAY
DON'T BE CAUGHT SHORT!
★ ★ ★
With recent motor car sales up 27½ percent over last year . . .
With more cars, trucks, tractors and buses rolling than ever before . . .
This Fall will hit an all-time high for winter motor oil and lubricant sales!
Get set and ready now to cash-in on this, the biggest winter oil sales boom of all time!
Canfield Quality Pennsylvania Oils and Greases will help you to "get" and "hold" more than your share of this profitable business, because Canfield Quality Pennsylvania Products . . .
1. Give extra STARTING PROTECTION
2. Give extra WARM-UP PROTECTION
3. Give extra HI-SPEED PROTECTION
You can build up a bigger dollar volume . . . a bigger percent of repeat sales . . . and a bigger profit-ratio with Canfield Pennsylvania Oils and Lubricants.
Write, telephone or telegraph for further details and prices.
THE CANFIELD OIL CO., Refiners of Petroleum
GENERAL OFFICES, CLEVELAND, OHIO
Plants, CORAOPOLIS, PA., CLEVELAND, O., JERSEY CITY, N. J.
Canfield QUALITY
PENNSYLVANIA
MOTOR OILS
100% PURE PENNSYLVANIA OIL



A Much Abused Word

Though quality is often a much abused word, it is always of first importance to buyers of cans.

It is just here that Crown Can has so much to offer, thanks to extensive buying connections and unusually fine facilities for the fabrication of prime quality containers.

With Crown, control is the watchword. Control of plate, control of dies and tools, control of all equipment by the most painstaking and unremitting inspection and supervision.

In short, Crown offers the progressive can buyer a thoroughly comprehensive can service backed by an interpretation of quality second to none.

CROWN CAN COMPANY, PHILADELPHIA, PA.

Division of Crown Cork and Seal Company

BALTIMORE ST. LOUIS HOUSTON MADISON ORLANDO
FORT WAYNE NEBRASKA CITY

CROWN CAN

INDEPENDENT AND HELPFUL

MARKETS

Mid-Continent

TULSA, Sept. 14.—Advancing prices for Grade 26-70 natural gasoline highlighted Mid-Continent markets the past week. Sales reported FOB Breckenridge totaled 77 cars, 42 at 1.50c and 35 at 1.75c. Reported Group 3 sales totaled 10 cars, 6 at 1.75c and 4 at 2c.

Sellers generally reported Oklahoma supplies of natural gasoline for Group 3 and local movement were "much tighter." One manufacturer said he was unable to buy 25-30 cars, for immediate shipment within Oklahoma. An Oklahoma manufacturer said he had turned down two inquiries, one for local delivery, on 2c offer, and was prorating to contract customers in some areas. Increased scarcity in Texas also was reported. Corpus Christi refiners were said to be having difficulty in obtaining supplies.

Although good movement of refined gasoline with "no immediate prospect of a slump in demand" was indicated by most Mid-Continent refiners, Oklahoma 72-74 oct. gasoline was down 0.125c on the high at 5.125c, with the low of the range unchanged at 4.625c. Some refiners said they were 1 to 2 days behind on orders. Reports of tank car scarcity also were heard. Two cars of 72-74 oct. were reported sold at 5.125c by an Oklahoma refiner. An Oklahoma refiner quoting 4.125c for 72-74 oct., restricted shipment, said he was making some sales at 4.125c in restricted areas. He said he was still quoting 4.625c, for unrestricted shipment.

Movement of burning oils continued in good volume, it was said. Railroad takings of heavy fuels continued at contract maximums, and indications were that this will continue until contracts expire, several refiners said.

Pennsylvania

CLEVELAND, Sept. 14.—Dark cylinder stocks were offered 1c a gal. lower in western Penna. the past week, but aside from these products, quotations reported by refiners generally were unchanged. All light products were said to be in good shape, while for the lubes demand was at a standstill, refiners said.

Steam refined stocks were down 1c at 7 to 8c for 600, 8 to 9c for 650, and 9 to 10c for 600 flash.

Reports that 25 pour test bright stock was being offered to jobbers and compounders at under 12c could not be confirmed with refiners. One refiner said he would sell 25 pour stock to other refiners at 10c, but named no price at which he would sell to other buyers. Another refiner who had been quoting 13c to jobbers, 10.50c inter-refinery, said, "We're not quoting except on inquiry. As for inter-refinery business, we'd quote whatever the established market is."

Still another refiner reported quoting 12 to 13c, and said he had obtained 13c "in some instances, but not for tank car lots." Quotations of 12c were reported by three other refiners. One of them said he would sell inter-refinery at 11c. "And, of course," he added, "jobbers are buying at this price and lower."

Atlantic Coast

NEW YORK, Sept. 14.—All grades of gasoline were down 0.25 to 0.75c at many points along the Atlantic Coast, according to reports of suppliers the past week. Kerosine also was offered 0.125c lower at some points.

Low quotations for 65-66, 68-70 and 72-74 oct. gasolines were down 0.5 to 0.625c at New York when several suppliers reported reducing their prices to 4.625c in tank cars and 4.50c in barges. Quotations reported by other New York suppliers in tank cars and barges ranged up to 5.75c for 65-66 oct., 5.50c for 68-70 oct., and 6.50c for 72-74 oct.

At Philadelphia and Baltimore, 60-64 oct. was offered at 5.50c and up, off 0.25c and 0.75c at the two points respectively.

A Philadelphia supplier reported 0.25c reduction to 5.25c in his quotation for 72-74 oct. gasoline with quotations reported by other Philadelphia suppliers ranging up to 7c. Another supplier said he had cut his quotations for 80 Minimum oct., 1939 Research, 0.25 to 6.25c at Charleston, Miami, Pensacola and Mobile and his 68-70 oct. quotations 0.25c to 5.75c along the entire southern seaboard. Quotations reported by other suppliers for these grades generally ranged up to 6.50c.

Gulf

NEW YORK, Sept. 14.—Reports here and from the Southwest the past week indicated that cargo trading at the Gulf was at a standstill. Most grades of gasoline were available from 0.25 to 0.375c lower, according to reports.

Minimum 80 oct. (1939 Research) with maximum of 2 cc. of lead was said to have been offered at 3.875c, 72-74 oct. (ASTM) leaded at 3.625c and 68 oct. (ASTM) unleaded at 3.75c.

Quotations for other products generally were reported unchanged. A refiner reported quoting 85c for part cargo of Bunker "C" fuel, adding that he believed the business went at "a shade under this price." Quotations reported for Grade "C" in cargoes ranged from $0.85 to $0.90.

Mid-Western

CHICAGO, Sept. 14.—Good burner fuel demand in the Middle West, under stimulus of cool weather, was reported by refiners and tank car marketers in Chicago the past week. No. 3 oil particularly was said to be getting "tight."

Reports current in the trade here this week were that 72-74 oct. leaded gasoline was available at 3.875c, FOB Group 3. Several tank car marketers said buyers had reported receiving offers at this price. Gasoline quotations reported by both refiners and tank car marketers were generally unchanged. Five tank car marketers reported quoting 4c for 72-74 oct. and one other said he was quoting 4.125c. Group 3 quotations reported by refiners for 72-74 oct. ranged from 4.625 to 5.125c.

Shipments of kerosine, mainly to the Northwest, and orders for industrial fuels from large manufacturing concerns, continued in large volume, according to refiners' and marketers' reports. Several sellers said the call for kerosine was "above average" for this time of year.

The following open spot sales were reported by five Chicago tank car marketers during the week: 25 cars of 72-74 oct. leaded gasoline, 22 cars at 4c, and 3 cars at 4.125c; 5 cars of 63-66 oct. at 3.50c; 3 cars of 60 and below, 1 car at 3.25c and 2 cars at 3.375c; 1 car of range oil at 3.50c; and 2 cars of No. 1 P. W. at 3.375c, all FOB Group 3.

California

LOS ANGELES, Sept. 14.—To meet Gulf Coast competition, leading California suppliers reported offering cargoes of all grades of gasoline at approximately 0.25c per gal. reduction from previous low prices on West Coast export markets. These reductions brought the range of U.S. Motor gasoline to 4.25-5.125c; 390 e.p. blend, 68 octane blend, 4.375-5.50c and 375 e.p. blend, 70 octane, 4.50-5.625c. Although no sales were reported at these prices, pressure of accumulated stocks and lack of buying interest were understood to have caused shippers to offer these price concessions.

In an effort to find new markets outside the highly competitive southern California districts, independent refiners with plants in the Los Angeles Basin were said to be shipping tank truck and trailer loads of gasoline into the San Joaquin valley at about 4.5c per gal., delivered.

Reversing the usual price relation, kerosine distillate was quoted at 5c per bbl. less than gas and diesel oils, bringing the range for k.d. to $1.10-$1.15 per bbl.

REFINERY and SEABOARD PRICES

In bulk lots by Motor Transport, Tank Car, Barge or Tanker as shown

(NOTE—Parenthetical figures after prices indicate number of companies quoting when less than three companies are quoting.)

HOW PRICES ARE REPORTED—

Refinery and Seaboard prices in National Petroleum News are gathered by PLATT'S OILGRAM and are as published in the Monday issue of the OILGRAM.

PLATT'S OILGRAM is a reporting service issued in three identical editions daily from News Bureaus at New York, Cleveland, and Tulsa, Okla. PLATT'S OILGRAM gathers and publishes what its publisher and representatives believe to be accurate news of sales, prices and current happenings affecting the oil industry and that will be of interest to its subscribers. As this information is usually private, OILGRAM reports it according to what it is able to obtain from sources deemed reliable.

All information is supplied without guarantee as to its completeness, accuracy, time of transmission or promptness of delivery.

The subscriber receives this information for his private use and not for resale or further distribution.

Publisher reserves the right to change the extent, nature and form of showing this information at any time.

Prices shown in the tables are quotations (meaning sellers' general offers or posted prices), or actual sales prices, reported to OILGRAM by refiners for "open spot" transactions, except as otherwise specified.

Prices arrived at by discounts off a specified price or "market date of shipment," prices named in contracts or prices arrived at in accordance with any arrangement made prior to date of sale, are not for "open spot" transactions and therefore are not considered in making the price tables. Prices made to brokers and prices in "inter-refinery" transactions are also not considered except as may be noted.

All prices are for "immediate" shipment except in Gulf Coast bulk transactions where shipment is generally to be made in ninety days. Prices are FOB refineries, pipelines, or tanker terminals in districts designated.

Prices shown are for quantities in bulk such as tank car lots, motor transport lots or barge lots; and in cents per gallon; heavy fuel oils are in dollars per barrel of 42 U.S. gallons; wax and petrolatums are in cents per pound. Prices applying to barges or cargoes only are so designated.

Prices do not include taxes or inspection fees. Prices are published at the close of the business day.

Mid-Western prices in the tables were gathered from refiners with offices located in Chicago and the surrounding territory. While the prices are quoted on a Group 3 (Oklahoma) freight basis, this is in accordance with the custom of the oil industry which uses Group 3 as a price basis for the ease of comparing prices even when the material originates in another refining district. Other refinery prices are given by and for the particular refining district where the material is made and from which it is shipped.

When prices obtained by OILGRAM do not conform to these conditions the exception and the new conditions are noted in the news lead or in conjunction with the price table by footnote or otherwise, for the particular refinery or sales district involved.

Crude oil and products covered by OILGRAM'S news and price service, except where noted, have been represented to the publisher as fully up to the customary trade specifications indicated and according to the generally accepted methods of test; and all crude oil and all products thereof as having been lawfully produced and transported.

Any apparent error should be reported to the nearest OILGRAM or National Petroleum News office at once as no correction will be made after the second issue of the OILGRAM or National Petroleum News following its publication.

Summary of Daily Gasoline Prices (Sept. 10 to Sept. 16)

U. S. Motor, (ASTM octane)	Latest Prices Mon. Sept. 16	Sept. 13	Sept. 12	Sept. 11	Sept. 10
72-74 octane:					
Oklahoma	(r) 4.625–5.125	(r) 4.625–5.125	(r) 4.625–5.125	(r) 4.625–5.125	4.625– 5.125
Mid-Western (Group 3 basis)	4.625– 5.00	4.625– 5.125	4.625– 5.125	4.625– 5.125	4.75 – 4.875
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875	4.75 – 4.875	4.875 (2)
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	4.875 (2)	4.875 (2)	4.875 (2)	4.875 (2)	
63-66 octane:					4.25 – 4.75
Oklahoma	4.25 – 4.75	4.25 – 4.75	4.25 – 4.75	4.25 – 4.75	4.25 – 4.75
Mid-Western (Group 3 basis)	4.25 – 4.75	4.25 – 4.75	4.25 – 4.75	4.25 – 4.75	4.00 – 4.625
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	4.00 – 4.625	4.00 – 4.625	4.00 – 4.625	4.00 – 4.625	4.50 (2)
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	4.50 (2)	4.50 (2)	4.50 (2)	4.50 (2)	
60 octane & below:					3.875– 4.25
Oklahoma	3.875– 4.25	3.875– 4.25	3.875– 4.25	3.875– 4.25	3.875– 4.25
Mid-Western (Group 3 basis)	3.875– 4.25	3.875– 4.25	3.875– 4.25	3.875– 4.25	3.50 – 4.00
N. Tex. (For shpt. to Tex. & N. M. dest'ns.)	3.50 – 4.00	3.50 – 4.00	3.50 – 4.00	3.50 – 4.00	3.875 (2)
W. Tex. (For shpt. to Tex. & N. M. dest'ns.)	3.875 (2)	3.875 (2)	3.875 (2)	3.875 (2)	
Motor Gasoline, 72-74 octane (ASTM):					4.625– 6.50
New York harbor	4.625– 6.50	4.625– 6.50	4.625– 6.50	4.625– 6.50	5.50 – 7.00
Philadelphia district	5.25 – 7.00	5.25 – 7.00	5.25 – 7.00	5.50 – 7.00	5.50 – 7.75
Baltimore district	5.50 – 7.25	5.50 – 7.25	5.50 – 7.75	5.50 – 7.75	
Motor Gasoline:					
74-76 Octane: (L-3)					6.00
Bradford-Warren (Western Penna.)	6.00	6.00	6.00	6.00	5.75 – 6.00
Other Districts (Western Penna.)	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00	5.75 – 6.00	
72-73 Octane: (L-3)					5.75 (2)
Bradford-Warren (Western Penna.)	5.75 (2)	5.75 (2)	5.75 (2)	5.75 (2)	5.75
Other Districts (Western Penna.)	5.75	5.75	5.75	5.75	

REFINERY PRICES

Gasoline—U. S. Motor (ASTM Octane) except where otherwise specified

Prices Effective	Sept. 16	Sept. 9
OKLAHOMA		
72-74 oct.	(r) 4.625–5.125	(r) 4.625– 5.25
63-66 oct.	4.25 – 4.75	4.25 – 4.75
60 oct. & below	3.875– 4.25	3.875– 4.25
60-62 400 e.p.	4.00 (2)	4.00 (2)
MID-WESTERN		
72-74 oct.	4.625– 5.00	4.625– 5.25
63-66 oct.	4.25 – 4.75	4.25 – 4.75
60 oct. & below	3.875– 4.25	3.875– 4.25
N. TEX. (For shpt. to Tex. & N. M. dest'ns.)		
72-74 oct.	4.75 – 4.875	4.75 – 4.875
63-66 oct.	4.00 – 4.625	4.00 – 4.625
60 oct. & below	3.50 – 4.00	3.50 – 4.00
60-62, 400 e.p.	4.00	4.00
W. TEX. (For shpt. to Tex. & N. M. dest'ns.)		
72-74 oct.	4.875 (2)	4.875 (2)
63-66 oct.	4.50 (2)	4.50 (2)
60 oct. & below	3.875 (2)	3.875 (2)
CENT. W. TEX. (Prices to truck transports)		
72-74 oct. (L-3)	4.50 (1)	4.50 (1)
67-69 oct. (L-3)	3.75 (1)	3.75 (1)
62 oct. & below (L-3)	3.25 (1)	3.25 (1)
KANSAS (For Kansas destinations only)		
72-74 oct.	4.875– 5.125	4.875– 5.125
63-66 oct.	4.50 – 4.75	4.50 – 4.75
60 oct. & below	4.125– 4.375	4.125– 4.375

Prices Effective	Sept. 16	Sept. 9
ARK. (FOB Ark. plant of one refiner, for shipment to Ark. & La.)		
72-74 oct.	4.75	4.75
70-72 oct.	4.625	4.625
60 oct. & below	4.25	4.25
WESTERN PENNA. (Motor gasoline.)		
Bradford-Warren:		
74-76 oct. (L-3)	6.00	6.00
72-73 oct. (L-3)	5.75 (2)	5.75 (2)
Naphtha		
Untreated naphtha	.....	.....
Stoddard Solvent	.....	.....
Other districts:		
74-76 oct. (L-3)	5.75 – 6.00	5.75 – 6.00
72-73 oct. (L-3)	5.75	5.75 – 6.00
Naphtha		
Untreated naphtha	5.50 – 5.75	5.50 – 5.75
Stoddard Solvent	5.75 – 6.00	5.75 – 6.00
CENTRAL MICHIGAN (f)		
U.S. Motor: (Oct. L-3)		
72-74 oct.	6.25 – 7.00	6.25 – 7.00
67-69 oct.	5.50 – 6.25	5.50 – 6.25
Str.-Run Gasoline	(g) 4.25–5.00	(g) 4.25–5.00
OHIO (S. O. Ohio quotations for statewide delivery and subject to exceptions for local price disturbances)		
72-74 oct.	7.125	7.125
CALIFORNIA U.S. Motor:		
58-61 grav., 375-400 e.p., 65 oct. & above	5.50 – 8.00	5.50 – 8.00
54-58 grav., for outside state shipment	5.00 – 6.50	5.00 – 6.50
54-58 grav., for instate shipment	4.25 – 6.25	4.25 – 6.25

Kerosine, Gas & Fuel Oils

Prices Effective	Sept. 16	Sept. 9
OKLAHOMA		
41-43 grav. w.w.	3.875– 4.25	3.875– 4.25
42-44 grav., w.w.	4.00 – 4.625	4.00 – 4.625
Range Oil	3.50 – 3.875	3.50 – 3.875
No. 1 P.W.	3.375– 3.75	3.375– 3.75
No. 1 straw	3.25–3.50 (2)	3.25–3.50 (2)
No. 2 straw	3.25 – 3.625	3.25 – 3.625
No. 2 dark	3.375 (1)	3.375 (1)
U.G.I. gas oil	3.25 (1)	3.25 (1)
No. 3 fuel	3.125–3.375 (2)	3.125–3.375 (2)
No. 6 fuel	$0.55 (2)	$0.55 (2)
14-16 fuel	$0.85 (1)	$0.85 (1)
MID-WESTERN		
41-43 grav. w.w.	3.875– 4.25	3.875– 4.25
42-44 grav. w.w.	4.00 – 4.625	4.00 – 4.625
Range oil	3.50 – 3.875	3.50 – 3.875
No. 1 p.w.	3.375– 3.75	3.375– 3.75
No. 1 straw	.....	.....
No. 2 straw	3.25 – 3.50	3.25 – 3.50
No. 3	3.125–3.375	3.125–3.375
No. 5	$0.75 (1)	$0.75 (1)
No. 6	$0.50–$0.55 (2)	$0.50–$0.55 (2)
N. TEX. (For shpt. to Tex. & N. M. dest'ns.)		
41-43 grav. w.w.	3.375– 3.875	3.375–3.875
No. 1 P.W.	3.875 (2)	3.875 (2)
KANSAS (For Kansas destinations only)		
41-43 gravity w.w.	4.25 (1)	4.25 (1)
42-44 gravity w.w.	4.125– 4.375	4.125– 4.375
No. 1 p.w.	3.625– 3.875	3.625– 3.875
No. 6 fuel	$0.60-$0.625 (2)	$0.60-$0.625 (2)

(f) Prices FOB Central Michigan refinery group basis for shipment within Michigan; shipments may originate at plants outside Central group. (g) Excluding Detroit shipment. (h) For shipment to Ark. points only. (r) One refiner reports quoting "4.125 to 4.625" for 72-74 oct., the lower price applying only to shipments into restricted competitive areas.

REFINERY PRICES (Continued)

(NOTE—Parenthetical figures after prices indicate number of companies quoting when less than three companies are quoting.)

Kerosine, Gas & Fuel Oil

(Continued)

Prices Effective	Sept. 16	Sept. 9
ARK. (F.o.b. Ark. plant of one refiner for shipment to Ark. and La.)		
41-43 grav. w.w.	4.25	4.25
No. 1	3.625	3.625
No. 2	3.375	3.375
28-32 zero fuel	3.25	3.25
Tractor Fuel	(h)4.25	(h)4.25
WESTERN PENNA.		
Bradford-Warren:		
45 grav. w.w.	(i)5.00 – 5.125	5.00 – 5.125
46 grav. w.w.	(i)5.25 (1)	5.25 (1)
36-40 gravity	(i)5.00 (1)	5.00
Other districts:		
45 grav. w.w.	4.75 – 5.00	4.75 – 5.00
46 grav. w.w.	4.875 (1)	4.875 (1)
47 grav. w.w.	4.875– 5.00	4.875– 5.125
36-40 gravity	(l) 4.00 –4.25	(l) 4.00 –4.25
CENTRAL MICHIGAN (f)		
47-49 gravity w.w.	4.75 – 5.00	4.50 – 5.00
P.W. Distillate	4.25 – 4.75	4.25 – 4.50
No. 3 gas oil, Str.	4.00 – 4.25	4.00 – 4.25
U.G.I. gas oil	3.25 – 4.00	3.25 – 4.00
Fuel Oils (Vis. at 100):		
500-700 Vis.	2.50–3.00 (2)	2.50–3.00 (2)
300-500 Vis.	2.50–3.25 (2)	2.50–3.25 (2)
100-300 Vis.	3.25–3.50 (1)	3.25–3.50 (1)
CALIFORNIA		
40-43 grav. w.w.	4.50 – 6.00	4.50 – 6.00
San Joaquin Valley:		
Heavy fuel	$0.45 –$0.75	$0.45 –$0.75
Light fuel	$0.55 –$0.85	$0.55 –$0.85
Diesel fuel	2.75 – 4.00	2.75 – 4.00
Stove dist.	3.00 – 5.00	3.00 – 5.00
Los Angeles:		
Heavy fuel	$0.45 –$0.60	$0.45 –$0.60
Light fuel	$0.45 –$0.70	$0.45 –$0.70
Diesel fuel	2.75 – 4.00	2.75 – 4.00
Stove dist.	2.75 – 5.00	2.75 – 5.00
San Francisco:		
Heavy fuel	$0.80	$0.80
Light fuel	$0.90	$0.90
Diesel fuel	4.50	4.50
Stove dist.	5.50	5.50

Note: All above heavy fuels meet Pacific specification 400; light fuel, spec. 300; Diesel fuels, spec. 200; and stove distillate, spec. 100

Lubricating Oils

WESTERN PENNA.

Prices are given by Penna. refiners as their quotations to jobbing and compounding trade only. Prices to other refiners generally are lower.

Viscous Neutrals — No. 3 col. Vis. at 70° F.

200 Vis. (180 at 100°) 420-425 fl.		
0 p.t.	24.50 (1)	24.50 (1)
10 p.t.	23.50 (1)	23.50 (1)
15 p.t.	22.50 (1)	22.50 (1)
25 p.t.	21.00 –22.00	21.00 –22.00
150 Vis. (143 at 100) 400-405 fl.		
0 p.t.	22.50 (1)	22.50 (1)
10 p.t.	21.50 (1)	21.50 (1)
15 p.t.	20.50 (1)	20.50 (1)
25 p.t.	19.00	19.00
Cylinder Stocks		
Brt. stk., 145-155 vis. at 210°, 540-550 fl., No. 8 col.		
10 p.t.	14.50 (1)	14.50 (1)
15 p.t.	13.50 (1)	13.50 (1)
25 p.t.	12.00 –13.00	12.00 –13.00
600 S.R. filterable	7.00 – 8.00	8.00
650 S.R.	8.00 – 9.00	9.00 –10.00
600 fl.	9.00 – 9.50	10.00 –11.00
630 fl.	11.00 –13.00	11.00 –13.00

MID-CONTINENT (F.o.b. Tulsa)

Neutral Oils Vis. at 100° F. 0 to 10 P.P.)

Pale Oils:

Vis.	Color		
60-85	No. 2	5.25 – 5.75	5.25 – 5.75
86-110	No. 2	5.25 – 6.25	5.25 – 6.25
150	No. 3	8.00 –10.25	8.00 –10.25
180	No. 3	8.50 –10.50	8.50 –10.50
200	No. 3	8.50 –11.00	8.50 –11.00
250	No. 3	10.00 –12.00	10.00 –12.00
280	No. 3	10.50 –13.75	10.50 –13.75
300	No. 3	11.50 –14.25	11.50 –14.25

Lubricating Oils (Cont'd)

Prices Effective	Sept. 16	Sept. 9
Red Oils:		
180—No. 5	8.50–9.00 (2)	8.50–9.00 (2)
200—No. 5	8.50–10.00 (2)	8.50–10.00 (2)
280—No. 5	11.50–12.00 (2)	11.50–12.00 (2)
300—No. 5	11.00 –12.00	11.00 –12.00

Note: Viscous Neutrals, 15-25 p.p. generally are quoted 0.5c under 0-10 p.p. oils. Non-viscous oils, 15-25 p.p., generally are quoted 0.25c under 0-10 p.p. oils.

Bright Stock—Vis. at 210°

200 Vis. D	18.00 (1)	18.00 (1)
150-160 Vis. D:		
0 to 10 p.p.	13.50 –16.00	13.50 –16.00
10 to 25 p.p.	13.00 –15.50	13.00 –15.50
25 to 40 p.p.	12.50–15.00 (2)	12.50–15.00 (2)
150-160 vis. E	12.50 –15.00	12.50 –15.00
120 Vis. D:		
0 to 10 p.p.	12.50 –15.25	13.50 –15.25
25 to 40 p.p.	14.375 (1)	14.375 (1)
600 S.R. Dark Green	7.00 (2)	7.00 (2)
600 S.R. Olive Green	8.00 – 9.50	8.00 – 9.50
631 S.R.	12.00 (1)	12.00 (1)
Black Oil	4.00–5.50 (2)	4.00–5.50 (2)

SOUTH TEXAS Neutral Oils

Vis.	Color		
Pale Oils: (*Vis. at 100°F*)			
100	No. 1½-2½	5.25 – 5.75	5.25 – 5.75
200	No. 2-3	7.25 – 7.75	7.25 – 7.75
300	No. 2-3	7.75 – 8.25	7.75 – 8.25
500	No. 2½-3½	8.50 – 9.00	8.50 – 9.00
750	No. 3-4	8.75 – 9.25	8.75 – 9.25
1200	No. 3-4	8.875– 9.375	8.875– 9.375
2000	No. 4	9.00 – 9.50	9.00 – 9.50
Red Oils:			
200	No. 5-6	7.25 – 7.50	7.25 – 7.75
300	No. 5-6	7.75 – 8.25	7.75 – 8.25
500	No. 5-6	8.50 – 9.00	8.50 – 9.00
750	No. 5-6	8.75 – 9.25	8.75 – 9.25
1200	No. 5-6	8.875– 9.375	8.875– 9.375
2000	No. 5-6	9.00 – 9.50	9.00 – 9.50

CHICAGO (From Mid-Continent p.l. crude)

Neutral Oils (Vis. at 100° F. 0 to 10 p.p.)

Pale Oils

Vis.	Color		
60-85	No. 2	7.25	7.25
86-110	No. 2	7.25	7.25
150	No. 3	8.50	8.50
180	No. 3	9.50	9.50
200	No. 3	10.00	10.00
250	No. 3	11.00	11.00
Red Oils:			
180	No. 5	9.50	9.50
200	No. 5	9.50	9.50
250	No. 5	11.00	11.00
280	No. 5	12.00	12.00
300	No. 5	12.00	12.00

Note: Viscous oils, 15 to 30 p.p. are quoted 0.5c lower; 60-85 and 86-110 No. 2 non-viscous oils, 15 to 30 p.p., 0.25c lower.

Unfiltered Steam Refined: (Viscosity at 210°)

140	8.75	8.75
160	9.50	9.50
200	10.50	10.50

Bright stocks, 160 vis. at 210, No. 8 color:

0 to 10 p.p.	15.50	15.50
15 to 25 p.p.	14.50	14.50
30 to 40 p.p.	13.95	13.95
E filtered Cyl. Stock	12.50	12.50

Note: To obtain prices delivered in Chicago, add 0.25c per gal.

Natural Gasoline

(Group 3 & Breckenridge prices are to blenders on freight basis shown below. Shipments may originate in any Mid-Continent manufacturing district.)

FOB GROUP 3		
Grade 26-70	(k)2.00	(k)1.75
FOB BRECKENRIDGE		
Grade 26-70	(k)1.75	(k)1.50
CALIFORNIA (FOB plants in Los Angeles basin)		
75-85, 350-375 e.p. for blending	4.75 – 5.00	4.75 – 5.00

Naphtha and Solvent

Prices Effective	Sept. 16	Sept. 9
(FOB Group 3)		
Stoddard solvent	5.875	5.875
Cleaners' naphtha	6.375	6.375
V. M. & P. naphtha	6.375	6.375
Mineral spirits	5.375	5.375
Rubber solvent	6.375	6.375
Lacquer diluent	6.625– 7.375	6.625– 7.375
Benzol Diluent	7.875– 8.375	7.875– 8.375

Wax

White Crude Scale:

WESTERN PENNA. (Bbls., C.L., N. Y.)		
122-124 A.m.p.	2.50 – 2.75	2.25 – 2.50
124-126 A.m.p.	2.50 – 2.75	2.25 – 2.50
OKLAHOMA		
124-6 AMP, bbls. or burlap bags, c.l.	2.50 (1)	.....
131-3 AMP, bbls., c.l.	2.75 (1)	.....

CHICAGO (FOB Chicago district refinery of one refiner, in bags or slabs loose, carloads. Melting points are EMP (ASTM) methods; add 3° F. to convert into AMP.)

Fully refined:		
122-124 (bags only)	5.60	5.60
125-127	5.60	5.60
127-129	5.85	5.85
130-132	6.15	6.15
132-134	6.40	6.40
135-137	7.15	7.15

Petrolatums

WESTERN PENNA. (Bbls., carloads; tank cars, 0.5c per lb. less.)		
Snow White	5.125– 6.125	5.125– 6.125
Lily White	4.375– 5.125	4.375– 5.125
Cream White	3.375– 4.125	3.375– 4.125
Light Amber	2.625– 3.00	2.625– 3.00
Amber	2.375– 2.875	2.375– 2.875
Red	2.125– 2.625	2.125– 2.625

Group 3 Freight Rates

To Division Headquarters Points of Standard Oil Co. of Indiana

	Gasoline-Kerosine		Distillate-Gas Oil-Fuel Oil	
	Cents per Cwt.	Cents per gal. 6.6 lbs.	Cents per Cwt.	Cents per gal. 7.4 lbs.
Chicago, Ill.	40	2.640	32	2.368
Decatur, Ill.	39	2.574	31	2.294
Joliet, Ill.	40	2.640	32	2.368
Peoria, Ill.	39	2.574	31	2.294
Quincy, Ill.	36	2.376	29	2.146
Indianapolis, Ind.	48	3.168	39	2.886
Evansville, Ind.	46	3.036	37	2.738
South Bend, Ind.	49	3.231	**42	**3.108
Detroit, Mich.	64	4.224	51	3.774
Gd. Rapids, Mich.	61	4.026	50	3.700
Saginaw, Mich.	66	4.356	53	3.922
Green Bay, Wis.	51	3.366	41	3.034
Milwaukee, Wis.	43	2.838	34.5	2.553
LaCrosse, Wis.	46	3.036	37	2.738
Min'ap'ls-St. Paul	46	3.036	37	2.738
Duluth, Minn.	52	3.432	41.5	3.071
Mankato, Minn.	46	3.036	37	2.738
Des Moines, Ia.	36	2.376	29	2.146
Davenport, Ia.	39	2.574	31	2.294
Mason City, Ia.	42	2.772	33.5	2.479
St. Louis, Mo.	33	2.178	26.5	1.961
Kansas City, Mo.	28	1.848	22.5	1.665
St. Joseph, Mo.	28	1.848	22.5	1.665
Fargo, N. D.	63	4.158	50.5	3.737
Minot, N. D.	83	5.478	66.5	4.921
Huron, S. D.	53	3.498	42.5	3.145
Wichita				
From Ponca City	7.5	*0.495	7.5	†0.555
From Tulsa	12.5	*0.825	12.5	†0.925
From Cushing	11	*0.726	11	†0.814

*This rate also includes distillate rate at 6.6 lbs. per gal.

**This rate applies only to residual fuel and gas oil. Combination rate of 32c per cwt. at 7.4. Group 3 to Chicago, plus 9c per cwt. at 6.6, Chicago to South Bend, total of 2.962c per gal., applies to petroleum fuel oil distillate not suitable for illuminating purposes.

†This rate is exclusive of distillate which is based on 6.6 lbs. per gal. from Ponca City, Tulsa and Cushing, Okla., to Wichita. Includes only gas oil and fuel oil.

NOTE: There is no Group 3 rate to Wichita, Kans.

(f) Prices FOB Central Michigan refinery group basis for shipment within Michigan: shipments may originate at plants outside Central group. (g) Excluding Detroit shipment. (h) For shipment to Ark. points only. (i) Quotations. (j) Sale. (k) Sales. (l) Pittsburgh district prices excluded.

SEABOARD PRICES EXPORT AND COASTWISE

(NOTE—Parenthetical figures after prices indicate number of companies quoting when less than three companies are quoting.)

Atlantic Coast

(Prices are of refiners, FOB their refineries & their tanker terminals, & of tanker terminal operators, FOB their terminals)

Prices Effective Sept. 16

MOTOR GASOLINE

District:	Min. 80 Oct. '39 Research (Max. 2 cc. Lead)	72-74 Oct. (ASTM)	68-70 Oct. (ASTM)	65-66 Oct. (ASTM)	60-64 Oct. (ASTM)
N. Y. Harb.	5.75 (2)	4.625– 6.50	4.625– 5.50	4.625– 5.75	5.75–6.00 (2)
N. Y. Harb., barges	5.75 –7.00	4.50 – 6.50	4.50 – 5.50	4.50 – 5.75	5.75–6.00 (2)
Albany	5.70 (1)	5.70 – 5.90	.....	.....	.....
Philadelphia	5.75 – 7.00	5.25 – 7.00	5.50 – 6.75	5.70 (1)	5.50 – 6.75
Baltimore	5.75 – 7.25	5.50 – 7.25	5.50–6.00 (2)	5.50 (1)	5.50 – 6.50
Norfolk	5.75 – 7.25	6.00 – 7.25	5.75–6.00 (2)	5.75 (1)	5.75 (1)
Wilm'ton	6.25 – 7.05	6.00 – 7.05	5.75 – 6.375	5.75 (1)	5.75 – 6.50
Char'ston	6.25–7.05 (2)	6.00 – 7.05	5.75–6.50 (2)	5.75 (1)	5.75–6.50 (2)
Savannah	6.00–6.25 (2)	6.00 – 6.50	5.50 – 6.375	.....	5.75–6.00 (2)
Jacksonville	6.00–6.50 (2)	5.625– 6.50	5.75 – 6.25	.....	5.375– 6.00
Miami	6.25–6.50 (1)	6.25 (1)	5.75–6.125 (2)	.....	5.50 (1)
Tampa	6.00–6.50 (2)	5.50 – 6.25	5.75–6.125 (2)	.....	5.375–5.75 (2)
Pensacola	6.25–6.50 (1)	.....	5.75–6.00 (1)	.....	.....
Mobile	6.25–6.50 (1)	5.75 (2)	5.75–6.00 (2)	.....	5.00–5.375 (2)
Portland	5.70 (2)	5.70	5.70 (1)	.....	.....
Boston	5.70 (2)	5.50 – 6.00	5.50 (1)	5.25 – 5.70	5.45 (2)
Providence	5.60 (2)	5.60 – 6.50	.....	5.60 (2)	5.35–6.00 (2)

FUEL OILS

	KEROSINE and/or NO. 1 FUEL	No. 2	No. 3	No. 5	No. 6
N. Y. Harb.	4.80	4.10	4.10	$1.35 –$1.55	$1.15 –$1.25
N. Y. Harb., barges	4.70	3.875– 4.00	3.875– 4.00	.....	.....
Albany	4.90	4.20 (2)	4.20 (1)	$1.85 (1)	$1.45 (1)
Philadelphia	5.00 – 5.50	4.25 – 5.00	4.25 – 5.00	$1.37 –$1.47	$1.15 –$1.25
Baltimore	4.75 – 5.00	4.00 – 4.25	4.00 – 4.25	$1.37 (1)	$1.15 $1.25
Norfolk	4.75 – 5.00	4.00 – 4.50	4.00 (1)	.....	$1.25 (2)
Wilmington	4.75 – 5.25	4.00	.....	.....	.....
Charleston	4.75 – 5.00	4.00 (2)	.....	.....	$1.20 (2)
Savannah	5.00 – 5.50	.....	.....	.....	$1.20 (i)
Jacksonville	5.00 – 5.50	4.25 (1)	4.25 (1)	.....	$1.20 (1)
Miami	5.125–5.50 (2)	.....	.....	.....	.....
Tampa	5.00 – 5.50	4.25 (1)	.....	.....	$1.15
Pensacola	5.125–5.25 (1)	.....	.....	.....	.....
Mobile	4.75 – 5.00	.....	.....	.....	.....
Portland	5.00	4.30	4.30	$1.85 (1)	$1.35 –$1.45
Boston	4.90	4.20	4.20	$1.55–$1.65 (2)	$1.25
Providence	4.90	4.20	4.20	$1.50 –$1.65	$1.25

	Bunker C Fuel Ships' bunkers (Ex Lighterage)	Diesel Oil Ships' bunkers (Ex Lighterage)	Diesel Oil Shore Plants	Gas House Gas Oil 28-34 Gravity
N. Y. harbor	$1.15–$1.25	$1.70	4.10	4.20
Albany	$1.45 (1)	$1.80	4.20	.....
Philadelphia	$1.15 –$1.25	$1.70 –$1.95	.....	.....
Baltimore	$1.15 –$1.25	$1.70	4.00	4.00
Norfolk	$1.25	$1.68 –$1.70	4.00	4.00
Charleston	$1.20	$1.68 –$1.70	4.00	4.00
Savannah	$1.20(1)	$1.785–$1.995	.....	.....
Jacksonville	$1.20	$1.785–$1.995	.....	.....
Tampa	$1.15	$1.785–$1.995	.....	.....
Portland	$1.35 –$1.45	$1.80	4.30	4.40
Boston	$1.25	$1.70	4.20	4.30
Providence	$1.25	$1.70	4.20	4.30

New York Export Lubes

(Penna. Products in bbls. FAS New York)

Prices Effective	Sept. 16	Sept. 9
Bright stock:		
Light, 25 p.t.	20.50 (1)	19.00–20.50(2)
Neutral oil:		
200 3 color, 25 p.t.	.....	27.00 (1)
150 3 color, 25 p.t.	25.50 (1)	25.00–25.50(2)
600 s.r., unfilt.	16.50 (1)	15.50–16.50 (2)
650 s.r., unfilt.	18.00 (1)	16.50–18.00 (2)
600 fl. s.r.	19.00 (1)	17.50–19.00 (2)
630 fl., s.r.	21.00 (1)	20.00–21.00 (2)

Wax

(A.S.T.M. Tests. Melting points, however, are A.M.P., 3° higher than E.M.P. Export prices, FAS, c.l. Domestic prices, FOB. refr'ies., in bags, c.l., with 0.2c discount allowed for shipment in bulk, except where noted. Sale solid; fully refined slabs in bags)

Prices Effective Sept. 16

	New Orleans Export	N. Y. Domestic	N. Y. Export
Crude Scale:			
124-6 Yellow	2.50(1)	.....	2.50(1)
122-4 White	....	2.25–2.50	2.25–2.50
124-6 White	2.50 (2)	2.25–2.50	2.25–2.50
Fully Refined:			
123-5	....	5.60	5.60 (2)
125-7	5.60 (1)	5.60	5.60
128-30	6.15 (1)	5.60–5.70(i)	5.60
130-2	6.15 (1)	5.85 (i)	5.85
133-5	6.40 (1)	6.15 (i)	6.15
135-7	7.15 (1)	6.40 (i)	6.40
108-11 White Match	....	....	3.00 (1&j)

Naphtha

Prices Effective Sept. 16	V.M.&P. Naphtha	Mineral Spirits
Baltimore	9.50	8.00
New York Harbor	8.80 – 9.50	8.20 – 8.50
Philadelphia district	10.00	8.00 – 9.00
Boston	9.50	9.25 – 9.50
Providence	9.50	9.00 – 9.50
†Ohio points, delivered	8.75	*8.25

*This is on rubber solvent.

†Ohio prices are those of S. O. Ohio. Its prices for D.C. naphtha, special Varnolene, Varnolene and Sohio Solvent are same as for V.M.&P.

Pacific Export

(Quotations at seaboard, Los Angeles, cargo lots, except where otherwise noted.)

Prices Effective	Sept. 16	Sept. 9
375 e.p. blend, 70 oct.	4.50 – 5.625	4.75 – 5.875
390 e.p. blend, 68 oct.	4.375– 5.50	4.625– 5.75
390 e.p. blend, 66 oct.	4.375– 5.375	4.625– 5.625
400 e.p. blend, 65 oct. min.	4.25 – 5.25	4.50 – 5.50
U. S. Motor, under 65 octane	4.25 – 5.125	4.50 – 5.375
38-40 grav. w.w. kero., 150 fire point	4.50 – 5.00	4.50 – 5.00
41-43 grav., w.w. kero.	4.75 – 5.00	4.75 – 5.00
44 grav., w.w. kero.	5.00 – 5.50	5.00 – 5.50
Diesel fuel, 24 & above	$1.25 –$1.30	$1.25 –$1.30
Diesel fuel, under 24	$1.15 –$1.25	$1.15 –$1.25
30-34 grav. diesel (gas oil) Pac. Spec. 200	$1.25 –$1.35	$1.25 –$1.35
Grade C fuel, Pac. Spec. 400	$0.60 –$0.65	$0.60 –$0.65
In Ships' Bunkers, or deep tank lots:		
Diesel fuel, Pac. Spec. 200	$1.35 –$1.45	$1.35 –$1.45
Grade C fuel, Pac. Spec. 400	$0.85 –$0.90	$0.85 –$0.90

(i) Shipment in bags or in bulk. (j) Shipment in tight barrels.

Pacific Export (Cont'd)

Prices Effective	Sept. 16	Sept. 9
Cased Goods: (Per case)		
U. S. M.	$1.45 –$1.55	$1.45 –$1.55
375-400 e.p. blend, 65 oct. & above	$1.60 –$1.70	$1.60 –$1.70
400 e.p. blend, under 65 oct.	$1.50 –$1.60	$1.50 –$1.60
40-43 grav. w.w. kero., 150 fire point	$1.40 –$1.50	$1.40 –$1.50
Kero., p.w.	$1.30 –$1.45	$1.30 –$1.45

Tanker Rates

(Approximate rates. Cents per bbl.)	Last Paid	Owners Ask
Gulf-N. Atlantic: (not E. of N.Y.)		
Hvy. Crude & fuel, (10 to 19.9 gravity)	20	20
Light Crude, (30 Grav. or Lighter)	18	18
Gasoline	18	18–19
Kerosine	19	19–20
No. 2 Fuel	20	20–21

Gulf Coast

(Prices for sales made or firm offers reliably reported for sales pending in cargoes FOB ship at Gulf for domestic and export for minimum of 20,000 bbls. Prices are by refiners only to other refiners, export agents, or to large tanker terminal operators at the customary trade specifications noted.)

MOTOR GASOLINE

Prices Effective Sept. 16

	60-62 Gravity, 400 e.p.	61-63 Gravity, 390 e.p.	64-66 Gravity, 375 e.p.
Min. 80 oct., '39 Research, Max. 2 cc. lead		3.875– 5.00	
72-74 oct. leaded ASTM	3.625–4.75	4.25	4.25
70 oct. unleaded ASTM	4.25 –4.75	....	....
68 oct. unleaded ASTM	3.75 –4.75	....	....
65 oct. unleaded ASTM	3.625–4.625	....	....
60 oct. unleaded ASTM	3.625– 4.50	4.00	4.00

KEROSINE, GAS & FUEL OILS

	Sept. 16	Sept. 9
41-43 grav. w.w. kero.	4.00	4.00
Gas Oil (Less than ½ of 1% sulfur)		
Below 43 diesel index	3.125– 3.375	3.125– 3.375
43-47 diesel index	3.125– 3.375	3.125– 3.375
48-52 diesel index	3.125– 3.625	3.125– 3.625
53-57 diesel index	3.50 – 3.75	3.50 – 3.75
58 & above	3.75 – 4.125	3.75 – 4.125
No. 2 fuel	3.375– 3.75	3.375– 3.75
Diesel oil, ships' bunkers, ex lighterage	$1.50 –$1.70	$1.50 –$1.70
Grade C, ships' bunkers, ex lighterage	$0.80 –$0.90	$0.80 –$0.90
Grade C cargoes	$0.85 –$0.90	$0.85 $0.90

MID-CONTINENT LUBES

(At Gulf; in packages, FAS.; in bulk FOB terminals)

Sept. 16

	New Steel Drums	Bulk
200 vis. D. 210 brt. stock	25.50–25.80 (2)	19.80 (2)
150 vis. D 210 brt. stock 0-10 p.p.	21.50–21.80 (2)	15.80 (2)
10-25 p.p.	21.00 (1)	15.30 (1)
100 vis. D 210 brt. stock 0-10 p.p.	21.00 (1)	15.30 (1)
10-25 p.p.	20.50 (1)	14.80 (1)
200 vis. No. 3 col. neutral: 0-10 p.p.	17.00 (1)	11.30 (1)

SOUTH TEXAS LUBES

(Vis. at 100°, c. t. 0, blk. exprt. shp., FOB terminals.)

Unfiltered Pale Oils: Vis. Color	Sept. 16	Sept. 9
100 No. 3	6.00 – 6.50	6.00 – 6.50
200 No. 3	7.50 – 8.50	7.50 – 8.50
300 No. 3	8.00 – 9.00	8.00 – 9.00
500 No. 3½	9.00 –10.50	9.00 –10.50
750 No. 4	9.50 –11.00	9.50 –11.00
1200 No. 4	10.00 –13.50	10.00 –13.50
2000 No. 4	10.25	10.25
Red Oils:		
Vis. Color		
100 No. 5-6	6.00 – 6.50	6.00 – 6.50
200 No. 5-6	7.50 – 8.50	7.50 – 8.50
300 No. 5-6	8.00 – 9.00	8.00 – 9.00
500 No. 5-6	9.00 –10.50	9.00 –10.50
750 No. 5-6	9.50 –11.00	9.50 –11.00
1200 No. 5-6	10.00 –13.50	10.00 –13.50
2000 No. 5-6	10.25	10.25

TANK WAGON PRICES

Commercial or consumer tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes;** *they do, however, include inspection fees as shown in general footno'e. Gasoline taxes, shown in separate column, include 1.5c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes where levied are indicated in footnotes. Dealer discounts are shown in footnotes; for commercial consumer discounts, see NPN for Feb. 21, 1940. These prices in effect Sept. 16, 1940 as posted by principal marketing companies at their headquarters offices, but subject to later correction.*

S. O. New Jersey

Esso (*Regular Grade*)

	Consumer Tank Car	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
*Atlantic City, N. J	7.6	8.7	4.5	7.4
*Newark, N. J	7.6	8.7	4.5	7.4
Annapolis, Md	8.35	9.35	5.5	9.5
Baltimore, Md	7.75	8.75	5.5	8.5
Cumberland, Md	9.15	10.15	5.5	10
Washington, D. C	8	9	3.5	9.5
Danville, Va	8.95	11.45	6.5	11
Norfolk, Va	7.75	10.25	6.5	10.5
Petersburg, Va	8.05	10.55	6.5	11.2
Richmond, Va	8.05	10.55	6.5	10.5
Roanoke, Va	9.25	11.75	6.5	11
Charleston, W. Va	8.55	11.05	6.5	12.6
Parkersburg, W. Va	7.85	9.85	6.5	11.2
Wheeling, W. Va	8.85	10.75	6.5	11.8
Charlotte, N. C	9.9	10	7.5	11.8
Hickory, N. C	10.45	11.95	7.5	12.3
Mt. Airy, N. C	10.3	11.8	7.5	12.2
Raleigh, N. C	9.65	9	7.5	11.5
Salisbury, N. C	9.95	9	7.5	11.9
Charleston, S. C	7.75	10.25	7.5	9.25
Columbia, S. C	8.6	11.1	7.5	11.5
Spartanburg, S. C	9.3	11.8	7.5	12.2

	Mineral Spirits T.W.	V.M.&P. T.W.
Newark, N. J	11.5	15.5
Baltimore, Md	15.5	....
Washington, D. C	15	....

Fuel Oils T.W.	No. 1	No. 2	No. 3
Atlantic City, N. J	7.4	6.1	6.1
Newark	7.4	6.1	6.1
Annapolis, Md	....	6	....
Baltimore	6.75	6	5.5
Washington, D. C	7	6.25	6.25
Norfolk, Va	7	6	6
Petersburg	7.25	6.25	....
Richmond	7.25	6.25	6.25
Charlotte, N. C	8.5	7.25	....
Hickory	....	7.5	....
Raleigh	8.5	7	....
Charleston, S. C	8	6.5	....
Columbia	8.7	7.2	....
Spartanburg	9.8	8.3	....

*Effective Sept. 14, 1939, minimum retail resale price of 11.9c posted thru New Jersey.

Discounts:

Esso gasoline—to undivided dealers, 0.5c off dealer t.w. price, thru territory, except New Jersey. While above posted prices continue at Atlantic City and Newark, dealers will pay net price of 8.6c per gal. for Esso; dealers having pumps marked only Esso, Esso Extra and Standard White gasoline will pay 8.1c per gal. for Esso.

Kerosine—1c off t.w. price for 25 gals. or more, under contract thru territory (Baltimore city contract not necessary) except no discount in state of New Jersey.

Naphthas—To buyers taking following quantities at one time: Newark, 2c per gal. on 200 gals. or more, less than 200 gals. 0.5c higher price; Baltimore, 2c off on 25 to 100 gals. and 3c on over 100 gals.; Washington, 2c off to contract buyers.

Socony-Vacuum Oil Co., Inc.

Socony Mobilgas (*Regular Grade*)††

	Com. Con. T.C.	Div. Cons. T.W.	Dlr. T.W.	Gasoline Taxes	Kerosine T.W.
N.Y.C. (Bors. of Manh'tn, Bronx, Kings & Queens)	6.3	6.3	7.5	*5.5	7.6
Bor. of Richmond (S.I.)	6.3	6.3	7.3	*5.5	7.6
Albany, N. Y	6.2	6.5	7	5.5	7.3
Binghamton, N. Y	8.3	8.3	7.9	5.5	9.1
Buffalo, N. Y	7.1	7.1	8.1	5.5	7.5
Jamestown, N. Y	7.2	7.2	8.3	5.5	7.4
Plattsburg, N. Y	6.7	7.6	8.2	5.5	7.9
Rochester, N. Y	7.6	7.6	8.7	5.5	8.1
Syracuse, N. Y	7.5	7.5	6.4	5.5	8.2
Bridgeport, Conn	6.4	6.8	6	4.5	7.5
Danbury, Conn	6.9	7	7.9	4.5	8.2
Hartford, Conn	6.5	7	7	4.5	7.5
New Haven, Conn	6.4	6.5	5.5	4.5	7
Bangor, Me	6.1	7.1	7.6	5.5	7.8
Portland, Me	5.7	6.8	7.8	5.5	7.4
Boston, Mass	5.7	6.2	6.5	4.5	7.7
Concord, N. H	6.7	7.5	8.5	5.5	8.3
Lancaster, N. H	7.5	8.5	9.5	5.5	9.3
Manchester, N. H	6.6	7.4	7.5	5.5	8.5
Providence, R. I	5.6	6.1	7	4.5	7.7
Burlington, Vt	6.9	7.5	8.5	5.5	7.9
Rutland, Vt	7	7.8	8.7	5.5	8.3

	Mineral Spirits T.W.	V.M.&P. T.W.
Buffalo, N. Y	9.4	10.1
†New York City	8.2	8.8
Rochester, N. Y	10.2	10.9
Syracuse, N. Y	11.1	11.8
Boston, Mass	11	11
Bridgeport, Conn	11.5	12
Hartford, Conn	11	11.5
Providence, R. I	11	12

Fuel Oils T.W.	Mobilheat & Mobilheat Heavy
New York City	6
Albany, N. Y	6.1
Rochester, N. Y	6.4
Boston, Mass	6.1
Bangor, Me	6.6
Manchester, N. H	6.9
Burlington, Vt	6.8
Hartford, Conn	6.3
New Haven, Conn	6.3
Providence, R. I	6.1

*Plus 2% city sales tax computed at time of each sale.

†Prices apply to consumers only in quantities over 1000 gals. annually; for quantities under 1000 gals. annually, add 0.5c per gal.

††Same prices apply for No. 1 fuel.

Discounts: Gasoline—To undivided dealers, 0.5c less than divided dealer t.w.

Atlantic Refining

Atlantic White Flash Gasoline (*Regular Grade*)

	Commercial T.C.	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Philadelphia, Pa	7	8	5.5	10
Pittsburgh	7.5	9.5	5.5	10.5
Allentown	7.5	9	5.5	10.5
Erie	7	9.5	5.5	10
Scranton	7	8.75	5.5	10.5
Altoona	7.5	9.5	5.5	10.5
Emporium	7.5	9.5	5.5	10.5
Indiana	7.5	9.5	5.5	10.5
Uniontown	7.5	9.5	5.5	10.5
Harrisburg	7.5	9	5.5	10.5
Williamsport	7.5	9	5.5	10
Dover, Del	....	8.5	5.5	10.5
Wilmington	....	8	5.5	10
Boston, Mass	....	6.5	4.5	7.9
Springfield, Mass	....	6.9	4.5	8.4
Worcester, Mass	....	7.3	4.5	7.8
Fall River, Mass	....	7.1	4.5	7.9
Hartford, Conn	....	7	4.5	7.9
New Haven, Conn	....	5.5	4.5	7.9
Providence, R. I	....	7.1	4.5	7.9
Atlantic City, N. J	....	8	4.5	7.4
Camden, N. J	....	8	4.5	7.4
Trenton, N. J	....	7.3	4.5	7.4
Annapolis, Md	8.85	8.85	5.5	9.5
Baltimore, Md	8.25	8.25	5.5	8.5
Hagerstown, Md	9.35	9.35	5.5	10
Richmond, Va	10.05	10.05	6.5	10.5
Wilmington, N. C	9.85	9.85	7.5	10.8
Brunswick, Ga	....	8	7.5	*9
Jacksonville, Fla	....	6.5	8.5	10

	Mineral Spirits T.W.†	V.M.&P. T.W.†
Philadelphia, Pa	12	14.5
Lancaster, Pa	13.5	16
Pittsburgh, Pa	14.5	14.5

Fuel Oils—T.W.	1	2	3	5	6
Phila., Pa	8	6.25	6.25	4.25	3.50
Allentown, Pa	8.5	6.25	6.25	....	....
Wilmington, Del	8.00	6.25	6.25	....	....
Springfield, Mass	8.4	6.5	6.5	....	....
Worcester, Mass	7.8	6.4	6.4	....	....
Hartford, Conn	7.9	6.3	6.3	....	....

*Does not include 1c Georgia kerosine tax.

†Mineral Spirits prices also apply to Stoddard Solvent; V.M.&P. prices also apply to Light Cleaners Naphtha.

Discounts:

Gasoline—to undivided dealers, 0.5c off dealer t.w., except Georgia & Florida dealer t.w. and undivided dealer t.w. prices are same. At Scranton, Pa., 1c per gal. voluntary discount allowed to dealers only.

Kerosine—Thru Penna. & Delaware, 2c off t.w. price on t.w. deliveries of 25 gals. or more at one time.

Naphthas—Philadelphia, 200 gals. or more at one time, 2c off. Lancaster, contract buyers taking 1000 gals. or more per year, one drum up, 2c off; non-contract buyers, 200 gals. or more at one time, 2c off. Pittsburgh, 500 gals. or more at one time, 2c off.

S. O. Ohio

***Sohio X-70 Gasoline (*Regular Grade*)**

	Consumer T.W.	**Resellers	‡S.S.	Gasoline Taxes	†Kerosine T.W.
Ohio, Statewide	10.5	9	12.5	5.5	8
Akron	10.5	7.5	9.5	5.5	8
Cincinnati	10.5	8	11	5.5	8
Cleveland	10.5	8	11	5.5	8
Columbus	10.5	8	11	5.5	8
Dayton	10.5	7.5	10	5.5	8
Marietta	10.5	8.5	11	5.5	8
Portsmouth	10.5	9	12.5	5.5	8
Toledo	10.5	7.5	10	5.5	8
Youngstown	10.5	8	11	5.5	7.5

Esso Aviation Gasoline—Thru Ohio

	Consumer T.W.	Gasoline Taxes
74 octane	15.5	5.5
80 octane	16.5	5.5
87 octane	17.5	5.5

†Naphthas — Statewide	T.W.
S.R. Solvent	12.75
D.C. Naphtha	13.25
V.M.&P. Naphtha	13.25
Varnolene	13.25
Sohio Solvent	13.25

††Fuel Oils T.W.	No. 1	No. 2	No. 3
Toledo	7.00	7.00	6.50
Rest of Ohio	7.50	7.50	7.00

*Renown (third-grade) prices are same as X-70 unless otherwise noted.

**Except authorized agents.

†Kerosine prices are ex 1c state tax. Naphtha prices are ex 1.5c federal & 4c state tax.

‡Prices at company-operated stations.

††Prices are for full compartment hose dumps; bucket dumps are 0.5c per gal. higher.

Discounts:

Esso aviation—on contract to hangar operators and resellers, 2c off consumer t.w.

Naphthas—to contract consumers off t.w. prices: 300 to 999 gals., 0.5c; 1000 to 2499 gals., 0.75c; 2500 to 4999 gals., 1c; 5000 or more gals., 1.5c.

S. O. Kentucky

Crown Gasoline (*Regular*)
Standard (*Third Grade*)

	†Net Dealer Crown	Standard	Gasoline Taxes	Kerosine T.W.
Covington, Ky	8	7	6.5	9.5
Lexington, Ky	8	6	6.5	9.5
Louisville, Ky	8.5	6.5	6.5	9
Paducah, Ky	7.5	7	6.5	9
Jackson, Miss	8.5	7.5	7.5	*8.5
Vicksburg, Miss	8.5	7.5	7.5	*8.5
Birmingham, Ala	9	8	*8.5	9
Mobile, Ala	6	5	*9.5	8
Montgomery, Ala	9	7.5	*9.5	*9
Atlanta, Ga	7.5	7	7.5	*9
Augusta, Ga	9.5	8.5	7.5	*9
Macon, Ga	7.5	6.5	7.5	*8
Savannah, Ga	8.5	7.5	7.5	*8
Jacksonville, Fla	6.5	6	8.5	8
Miami, Fla	7	6.5	8.5	8
Pensacola, Fla	8	7	*9.5	8.5
Tampa, Fla	6.5	6	8.5	8

*Taxes: In tax column are included these city and county gasoline taxes: Mobile, 2c city, Birmingham, 1c city; Montgomery, 1c city and 1c county; Pensacola, 1c city. Georgia and Montgomery, Ala. have 1c kerosine tax, Mississippi 0.5c, not included in above prices.

†Consumer t.w. prices are same as net dealer prices.

S. O. Indiana

Red Crown (*Regular Grade*)
Stanolind (*Third Grade*)

	Red Dealer Prices Crown Cons. T.W.	Crown	Red Stanolind	Gasoline Taxes	Kerosine T.W.
Chicago, Ill	11.1	9.1	6.4	4.5	10
Decatur, Ill	10.1	8.6	7	4.5	9.5
Joliet, Ill	11.1	9.6	8.1	4.5	10
Peoria, Ill	11.1	8.7	8.1	4.5	10
Quincy, Ill	10.9	9.4	6.2	4.5	9.8
Indianapolis, Ind	11.3	9.3	8.9	5.5	*10
Evansville, Ind	11.1	9.6	9.1	5.5	*9.8
South Bend, Ind	11.3	9.8	8.3	5.5	*10
Detroit, Mich	9.6	8.1	7.1	4.5	7.6
Grand Rapids, Mich	8.7	6.7	6.7	4.5	9
Saginaw, Mich	10.4	8.9	8.4	4.5	9.1
Green Bay, Wis	11.9	10.4	8.9	5.5	10.3
Milwaukee, Wis	11.3	9.8	9.3	5.5	10.2
La Crosse, Wis	11.5	10	9.5	5.5	10.4
Minneapolis-St. Paul	11.5	9.7	9.2	4.5	10.4
Duluth, Minn	11.9	10.4	9.9	4.5	10.8
Mankato, Minn	11.5	10	8.5	4.5	9
Des Moines, Ia	10.9	9.4	7.9	4.5	*9.8
Davenport, Ia	11.1	9.6	8.1	4.5	*10
Mason City, Ia	11.3	9.8	7.4	4.5	*10.2
St. Louis, Mo	10.7	8.7	7	*4.5	9
Kansas City, Mo	10.3	8.8	6.9	*4.5	8
St. Joseph, Mo	10.4	8.5	7.5	*4.5	7.9
Fargo, N. D	12.7	11.2	9.3	5.5	11.6
Huron, S. D	12	10.5	10	5.5	10.9
Wichita, Kans	9.3	7.8	5.5	4.5	7

(Continued on next page)

TANK WAGON PRICES

Commercial or consumer tank car, tank wagon, dealer, and service station prices for gasoline **do not include taxes:** *they do, however, include inspection fees as shown in general footnote. Gasoline taxes, shown in separate column, include 1.5c federal, and state taxes; also city and county taxes as indicated in footnotes. Kerosine tank wagon prices also do not include taxes; kerosine taxes where levied, are indicated in footnotes. Dealer discounts are shown in footnotes; for commercial consumer discounts, see NP N for Feb. 21, 1940.*

These prices in effect Sept. 16, 1940 as posted by principal marketing companies at their headquarters offices, but subject to later correction.

S. O. Indiana (Cont'd)

Stanavo Aviation 73 Octane

Chicago, Ill.	14.9	
Detroit, Mich.	16.5	4.5
Milwaukee, Wis.	15.1	5.5
Minneapolis, Minn.	15.3	4.5
St. Louis, Mo.	14.5	3.5
Kansas City, Mo.	14.2	*4.5
Fargo, N. D.	16.5	5.5
Huron, S. D.	15.8	5.5

	Oleum Spirits	V.M.&P. Naphtha	Stanisol	*Taxes
(Prices are base prices before discounts)				
Chicago	12.7	13	12.4	4.5
Detroit	15.2	14.2	15.7	4.5
K. C., Mo.	12.9	13.9	13.4	1.5
St. Louis	13.2	14.2	12.4	1.5
Milwaukee	13.8	14.8	14.3	5.5
Minneap'ls	14	15	12.7	4.5

†Fuel Oils—T.W.	No. 1 Fuel	Stanolex Furnace
Chicago	**6.50	6.50
Indianapolis	....	*7.5
Detroit	....	6.6
Milwaukee	8.2	7.7
Minneapolis	7.5	7.5
St. Louis	7.0	6.50
Kansas City	6.8	6.8

*Taxes: In gasoline tax column are included these city taxes—Kansas City, St. Joseph, and St. Louis, 1c. Indiana kerosine and fuel oil prices are ex 4c state tax; Iowa kerosine prices are ex 3c state tax. In naphtha tax column are included 1c federal tax and state taxes.

†Prices for small-lot deliveries range up to 2c higher than above prices.

**For 400 gals. & over; 150 to 399 gals., 7c; 100 to 149 gals., 7.5c; 1 to 99 gals., 8.5c.

S. O. Nebraska

Standard Red Crown Gasoline (*Regular Grade*)

	T.W.	Dealer	Gasoline Taxes	Kerosine T.W.
Omaha	10.5	9.4	6.5	9.0
McCook	11	7.9	6.5	9.5
Norfolk	11	8.4	6.5	9.9
North Platte	11.3	8.5	6.5	10.2
Scottsbluff	11.9	9	6.5	10.5

S. O. Louisiana

Esso (*Regular Grade*)

	Consumer Tank Car	Dealer T.W.	Gasoline Taxes	Kerosine T.W.
Little Rock, Ark.	7.25	8.5	8	10
Alexandria, La.	6.75	9.25	8.5	*9.5
Baton Rouge, La.	6.75	9.25	8.5	*9.5
New Orleans, La.	5.75	8.25	8.5	*9
Lake Charles, La.	6.75	9.25	8.5	*9
Shreveport, La.	5.5	8	8.5	*8
Lafayette, La.	7	9.5	8.5	*9
Bristol, Tenn.	10.25	10.25	8.5	12
Chattanooga, Tenn.	9.5	7.25	8.5	12
Knoxville, Tenn.	10	11.5	8.5	12.5
Memphis, Tenn.	8	9.5	8.5	11
Nashville, Tenn.	9	8	8.5	11.5

*New Orleans kerosine price is ex 1c parish tax, and all Louisiana kerosine prices are ex 1c state tax.

Discounts:

Esso gasoline—to undivided dealers, 0.5c off dealer t.w.

Humble Oil & Refining Co.

Humble Motor Fuel (*Regular Grade*)

	Tank Truck	Retail	Gasoline Taxes	Kerosine T.W
Dallas, Tex.	6	10	5.5	6
Ft. Worth, Tex.	6	10	5.5	7
Houston, Tex.	7	11	5.5	8
San Antonio, Tex.	7	11	5.5	8

Thriftane

(Leaded, 67 Octane, Purple Gasoline)

Dallas	5	8	5.5
Ft. Worth	5	8	5.5
Houston	5	8	5.5
San Antonio	5	8	5.5

74 Octane Aviation Gasoline, Clear

	Tank Car
FOB Baytown, Tex.	8.5

*To all classes of dealers & consumers.

The Texas Co.

	Gasoline—Dealer T.W. Fire-Chief (*Regular*)	Indian (*3rd Grade*)	Gasoline Taxes
Dallas, Tex.	6	5	5.5
Ft. Worth, Tex.	6	5	5.5
Wichita, Falls, Tex.	7	5	5.5
Amarillo, Tex.	7	5	5.5
Tyler, Tex.	7	5	5.5
El Paso, Tex.	8	7	5.5
San Angelo, Tex.	7	5	5.5
Waco, Tex.	6.5	4.5	5.5
Austin, Tex.	7	5	5.5
Houston, Tex.	7	5	5.5
San Antonio, Tex.	7	5	5.5
Port Arthur, Tex.	8.5	5	5.5

Continental Oil

	Conoco Bronz-z-z (*Regular*) T.W.	Demand (*3rd Grade*) T.W.	Gasoline Taxes	Kerosine T.W.
Denver, Col.	8	7	5.5	10.5
Grand Junction, Col.	11	10	5.5	12.5
Pueblo, Col.	10	8	5.5	9
Casper, Wyo.	11	10	5.5	11.5
Cheyenne, Wyo.	9	8	5.5	11
Billings, Mont.	11	10	6.5	12
Butte, Mont.	9	8	6.5	13
Great Falls, Mont.	11	9	6.5	12
Helena, Mont.	9	8	6.5	12.5
Salt Lake City, Utah	10.5	9.5	5.5	14
Boise, Ida.	*12.1	11.1	6.5	16
Twin Falls, Ida.	*15.1	*14.1	6.5	16.5
Albuquerque, N. M.	9	8	*7	9.5
Roswell, N. M.	7	6	*7	8
Santa Fe, N. M.	9.5	8.5	*7.5	9.5
Ft. Smith, Ark.	9.5	6.25	5.5	7
Little Rock, Ark.	8	7	8	8
Texarkana, Ark.	8	5	5.5	6
Muskogee, Okla.	8	7	5.5	7
Oklahoma City, Okla.	6	5.5	5.5	6.5
Tulsa, Okla.	7	6	5.5	6

Conoco Special Gasoline (Aviation)

	T.W.	Gasoline Taxes
Denver, Colo.	15	5.5
Cheyenne, Wyo.	15.5	5.5
Helena, Mont.	22.5	6.5
Salt Lake City, Utah	18	5.5
Albuquerque, N. M.	14	*7

*Taxes: In gasoline tax column are included these city taxes—Albuquerque and Roswell, 0.5c; Santa Fe 1c. Idaho prices include 0.1c to cover 1-mill tax for toll bridges.

S. O. California

Standard Gasoline (*Regular Grade*)

	Tank Truck	Retail	Gasoline Taxes	Kerosine T.W.
San Francisco, Cal.	12	13	4.5	11.5
Los Angeles, Cal.	11.5	12.5	4.5	10
Fresno, Cal.	13	14	4.5	12.5
Phoenix, Ariz.	14	15	6.5	*12.5
Reno, Nev.	14	15	5.5	13.5
Portland, Ore.	12.5	13.5	6.5	13.5
Seattle, Wash.	12.5	13.5	6.5	13.5
Spokane, Wash.	14	15	6.5	16.5
Tacoma, Wash.	12.5	13.5	6.5	13.5

Flight Gasoline (*Third Grade*)

San Francisco, Cal.	10	11	4.5	....
Los Angeles, Cal.	9.5	10.5	4.5	....
Fresno, Cal.	11	12	4.5	....
Reno, Nev.	12	13	5.5	....
Phoenix, Ariz.	11	12	6.5	....
Portland, Ore.	10.5	11.5	6.5	....
Seattle, Wash.	10.5	11.5	6.5	....
Spokane, Wash.	12	13	6.5	....
Tacoma, Wash.	10.5	11.5	6.5	....

Stanavo Aviation Gasoline

Phoenix, Ariz.	17.5	..	6.5	....
Los Angeles, Cal.	15	..	4.5	....
San Francisco, Cal.	15.5	..	4.5	....
Reno, Nev.	17.5	..	5.5	....
Portland, Ore.	16	..	6.5	....
Seattle, Wash.	16	..	6.5	....
Spokane, Wash.	19	..	6.5	....

*Taxes: Arizona kerosine prices are ex 5c state tax.

Discounts:

To 100% dealers—3c off t.w. on Standard and Stanavo Aviation; 2c off t.w. on Flight.

Canada

PRICES OF IMPERIAL OIL LTD.

Per Imperial Gallon, which is 1.2 U. S. Gallons

3-Star Imperial Gasoline

	T.W. (*Regular Grade*)	Gasoline Taxes	Kerosine T.W.
Hamilton, Ont.	16.5	8	17
Toronto, Ont.	16.5	8	17
Brandon, Man.	21	7	22.50
Winnipeg, Man.	20.5	7	22.5
Regina, Sask.	18	7	20
Saskatoon, Sask.	21	7	23
Edmonton, Alta.	18	7	20
Calgary, Alta.	16	7	18
Vancouver, B. C.	16	7	23
Montreal, Que.	16	8	16.5
St. John, N. B.	14.50	10	18
Halifax, N. S.	14.50	10	18

Discounts: To undivided dealers, 1c off t.w. price, except Maritime Provinces where undivided dealers pay t.w. price, and except Vancouver, B. C. where both divided and undivided dealers get 2c off t.w. price. Divided dealers pay t.w. price thru territory.

Price Changes

(These changes have been made in price tables)

Socony-Vacuum—Mobilgas:

Boston divided dealer t. w. up 0.5c, Sept. 7.

Atlantic Refining—White Flash:

Pittsburgh, Allentown, Altoona, Emporium, Indiana, Uniontown, Harrisburg, and Williamsport commercial t. c. cut 0.5c, Sept. 12.

Erie commercial t. c. cut 1c, Sept. 12.

Initial Maryland, Virginia, and North Carolina commercial t. c. postings (see price table).

Philadelphia, Allentown, Altoona, Emporium, Indiana, Uniontown, Harrisburg, Williamsport, and Wilmington dealer t. w. cut 0.5c, Sept. 12.

Boston dealer t. w. up 0.5c, Sept. 9.

Atlantic City and Camden dealer t. w. cut 0.6c, Sept. 10.

Trenton dealer t. w. cut 0.3c, Sept. 10.

Annapolis, Baltimore, Hagerstown, Richmond and Wilmington dealer t. w. cut 0.5c, Sept. 10.

S. O. Indiana—Red Crown:

Grand Rapids consumer t. w. cut 0.5c, Sept. 10.

Kansas City consumer t. w. and dealer cut 0.1c, Sept. 7.

S. O. Indiana—Stanolind:

Quincy dealer cut 1.4c, Sept. 13.

Davenport dealer cut 0.3c, Aug. 31.

St. Louis dealer cut 0.5c, Sept. 9.

S. O. Nebraska—Red Crown:

Norfolk dealer cut 0.5c, Aug. 16.

Continental Oil—Conoco Bronz-z-z and Demand:

Grand Junction t. w. cut 1c, Aug. 23.

Boise t. w. cut 2c, Sept. 3.

Little Rock Bronz-z-z cut 1.25c, Aug. 9; Demand cut 0.5c, July 10.

Continental Oil—Kerosine:

Texarkana t. w. cut 1c, March 28.

CRUDE OIL PRICES

Prices in $ per bbl. of 42 U. S. gals. at the well. A. P. I. gravity. Prices are effective as of 7 a. m. of dates as given

EASTERN & CENTRAL STATES FIELDS

PENNSYLVANIA GRADE

Posted by Jos. Seep Purch. Agency (Aug. 28, 1940)
Bradford-Allegany $1.85
Southwest Penna. $1.50
Eureka (West Va.) $1.44
Corning, O. (Nov. 4, 1939) $1.12

Posted by Tide Water Assoc. Oil Co. (Aug. 28, 1940)
Bradford-Allegany $1.85

Posted by The Pennzoil Co. (Aug. 28, 1940)
National Transit $1.78*

Posted by Valvoline Pipe Lines (Aug. 28, 1940)
Bradford (Elk & McKean Counties, Pa.) $1.85
Warren, Forest, Venango, Clarion & Butler Counties, Pa. $1.78
Allegheny, Beaver, Washington & Greene Counties, Pa. $1.50
West Virginia $1.44
South Eastern Ohio $1.40
*Applies to Cochran, Franklin, Hamilton & Doolittle districts; prices in other lower districts range down to $1.73 per bbl. at well.

MICHIGAN

Posted by Pure Oil Co. (Aug. 24, 1940)
Midland, Midland County $1.12
Sherman $1.07
Clare-Freeman $1.07

Posted by Simrall Corp. (Aug. 24, 1940)
Crystal, Greendale, Porter, Vernon and Wise $1.12
Beaverton, Buckeye, Bentley, Edenville $1.10
Freeman and Redding $1.07
Arenac $0.92
West Branch $0.92

Posted by Sohio Corp. (Michigan Division)
Allegan & Kent Counties (Aug. 24, 1940) $1.18
Van Buren County (Sept. 3, 1940) $1.12

Posted by Bay Pipe Line Corp. (Aug. 24, 1940)
Bentley and Buckeye $1.10
Saginaw and Wise ..... $1.12 Clare $0.81

ILLINOIS-INDIANA-KENTUCKY

Posted by Ohio Oil Co.
Illinois and Western Indiana (Aug. 23, 1940) $1.00
Illinois Basin (Aug. 21, 1940) $1.15

Posted by Sohio Corp.
Illinois Basin:
Salem (Lake Centralia) (Aug. 21, 1940) $1.15
Balance of Illinois Basin (Aug. 21, 1940) $1.15
Griffin (So. Ill.-Ind.) pool (Aug. 21, 1940) $1.15

Posted by Carter Oil Co. (Aug. 21, 1940)
Louden, Fayette County, Ill. $1.15

Posted by Mohawk Oil Lines, Inc. (Aug. 21, 1940)
Southern Ill. heavy ..... $1.05 Light $1.15

Posted by Ashland Oil & Transportation Co. (Aug. 21, 1940)
Somerset Oil in Ashland Lines, Kentucky:
Big Sandy River ..... $1.12 Kentucky River $1.20

Posted by Sohio Corp. (Aug. 21, 1940)
Birk City, Ky., Area $1.05
Corydon, Ky. Area (Henderson) $1.05

Posted by Owensboro-Ashland Co.
Owensboro, Ky. Area (Aug. 21, 1940) $1.10

CANADIAN FIELDS

Posted by Imperial Oil Limited
Western Ontario (Nov. 6, 1939)
Petrolia ..... $2.10 Oil Springs $2.17

Turner Valley (Prices FOB producer's tankage)

Crude Oil (Sept. 12, 1940)

33-33.9	$1.08	44-44.9	$1.30	55-55.9	$1.52
34-34.9	1.10	45-45.9	1.32	56-56.9	1.54
35-35.9	1.12	46-46.9	1.34	57-57.9	1.56
36-36.9	1.14	47-47.9	1.36	58-58.9	1.58
37-37.9	1.16	48-48.9	1.38	59-59.9	1.60
38-38.9	1.18	49-49.9	1.40	60-60.9	1.62
39-39.9	1.20	50-50.9	1.42	61-61.9	1.64
40-40.9	1.22	51-51.9	1.44	62-62.9	1.66
41-41.9	1.24	52-52.9	1.46	63-63.9	1.68
42-42.9	1.26	53-53.9	1.48	64 & over	1.70
43-43.9	1.28	54-54.9	1.50		

Crude Naphtha (Jan. 5, 1938)
65 gravity & above $2.14

Absorption Gasoline (Jan. 5, 1938)
90% Rec., 20 lb. Reid v.p. $1.94
90% Rec., 17 lb. Reid v.p. $2.68

*MID-CONTINENT—Oklahoma-Kansas

	S. O. Indiana	Carter Mag-nolia Shell	Conti-nental Texas Co.	Sin-clair Prairie
Below 21°	$0.70	$0.60	....	....
21-21.9	.72	.63	....	....
22-22.9	.74	.66	....	....
23-23.9	.76	.69	....	....
24-24.9	.78	.72	....	....
25-25.9	.80	.75	....	$0.58
26-26.9	.82	.78	....	.63
27-27.9	.84	.81	....	.68
28-28.9	.86	.84	$0.86	.73
29-29.9	.88	.87	.88	.78
30-30.9	.90	.90	.90	.82
31-31.9	.92	.92	.92	.86
32-32.9	.94	.94	.94	.90
33-33.9	.96	.96	.96	.96
34-34.9	.98	.98	.98	.98
35-35.9	1.00	1.00	1.00	1.00
36-36.9	1.02	1.02	1.02	1.02
37-37.9	1.04	1.04	1.04	1.04
38-38.9	1.06	1.06	1.06	1.06
39-39.9	1.08	1.08	1.08	1.08
40 & above	1.10	1.10	1.10	1.10

*Effective in 1938 by Carter Oil, Oct. 13, posting in Okla. only: Continental Oil, Oct. 11, with lowest grade below 29; Magnolia, Oct. 12, posting in Okla. only; Shell, Oct. 22; S. O. Indiana, Oct. 17; The Texas Co., Oct. 12. Aug. 31, 1939, by Sinclair-Prairie.

*North-North Central and Central Texas

Below 21°	$0.63	27-27.9	$0.77	34-34.9	$0.91
21-21.9	.65	28-28.9	.79	35-35.9	.93
22-22.9	.67	29-29.9	.81	36-36.9	.95
23-23.9	.69	30-30.9	.83	37-37.9	.97
24-24.9	.71	31-31.9	.85	38-38.9	.99
25-25.9	.73	32-32.9	.87	39-39.9	1.01
26-26.9	.75	33-33.9	.89	40 & above	1.03

*Effective Sept. 1, 1940 by Stanolind in N. Texas; Oct. 11, 1938 by Continental in N. Texas; Oct. 12, 1938 by Texas Co. in N. & N. Central Texas; Dec. 3, 1938 by Magnolia in N. & N. Central Texas; July 16, 1940 by Sinclair-Prairie in Mexia & N. Central Texas. Texas Co.'s lowest grade is 28-28.9, at $0.79. Postings by Sinclair, Continental and Magnolia begin with $0.79 for Below 29 gravity oil.

Jefferson County, Texas—Beaumont

(Posted by Magnolia Petroleum Co., Effective Oct. 2, 1939, and by Stanolind Oil & Gas Co., for West Beaumont, Effective Oct. 2, 1939)

Below 20°	$0.86	30-30.9	$1.08
20-20.9	.88	31-31.9	1.10
21-21.9	.90	32-32.9	1.12
22-22.9	.92	33-33.9	1.14
23-23.9	.94	34-34.9	1.16
24-24.9	.96	35-35.9	1.18
25-25.9	.98	36-36.9	1.20
26-26.9	1.00	37-37.9	1.22
27-27.9	1.02	38-38.9	1.24
28-28.9	1.04	39-39.9	1.26
29-29.9	1.06	40 & above	1.28

TEXAS FIELDS

Posted by Humble Oil & Refining Co.

***West Central Texas** (Aug. 11, 1939)

24-24.9	$0.71	33-33.9	$0.89
25-25.9	.73	34-34.9	.91
26-26.9	.75	35-35.9	.93
27-27.9	.77	36-36.9	.95
28-28.9	.79	37-37.9	.97
29-29.9	.81	38-38.9	.99
30-30.9	.83	39-39.9	1.01
31-31.9	.85	40 & above	1.03
32-32.9	.87		

*Includes Brown, Callahan, Coleman, Comanche, Eastland, Fisher, Haskell, Jones, Shackelford, Stephens, Throckmorton and Young Counties.

Effective Aug. 29, 1939, Shell posted in Fisher county, Tex., prices 3c lower than Humble's West Central Texas prices; Shell's schedule begins with below 25, at $0.68 and ends with 40 & above, at $1.

Note: Effective Oct. 1, 1937, Humble prices are based on 100% tank tables at 60F.

***East Central Texas** (Aug. 11, 1939)

23-23.9	$0.78	32-32.9	$0.96
24-24.9	.80	33-33.9	.98
25-25.9	.82	34-34.9	1.00
26-26.9	.84	35-35.9	1.02
27-27.9	.86	36-36.9	1.04
28-28.9	.88	37-37.9	1.06
29-29.9	.90	38-38.9	1.08
30-30.9	.92	39-39.9	1.10
31-31.9	.94	40 and above	1.12

Posted by Pan American Pipe Line Co.
(Oct. 2, 1939)
Cayuga, Anderson county $0.78
*Including Anderson, Cherokee, Limestone, Navarro counties.

PANHANDLE TEXAS

	Humble (Aug. 11, 1939)		Texas Co. (Oct. 2, 1939)	
	Gray County	Carson Hutchinson	Sweet	Sour
28-28.9	$0.72	$0.67	....	....
29-29.9	.74	.69	....	....
30-30.9	.76	.71	....	....
31-31.9	.78	.73	....	....
32-32.9	.80	.75	....	....
33-33.9	.82	.77	....	....
34-34.9	.84	.79	$0.84	$0.79
35-35.9	.86	.81	.86	.81
36-36.9	.88	.83	.88	.83
37-37.9	.90	.85	.90	.85
38-38.9	.92	.87	.92	.87
39-39.9	.94	.89	.94	.89
40 & above	.96	.91	.96	.91

Effective Aug. 31, 1939, Sinclair Prairie met Humble in Panhandle Texas. Dec. 3, 1938, Magnolia posted same schedule as Humble.

*EAST TEXAS

By Humble, Shell, Sinclair-Prairie, Stanolind, Gulf, Magnolia, Texas Co., Tide Water-Associated $1.10

*Effective dates: Aug. 11, 1939, by Humble and Tide Water-Associated; Aug. 29, 1939, by Stanolind; Oct. 2, 1939 by Sinclair Prairie; Oct. 5, 1939 by Shell; Oct. 12, 1938, by Magnolia, Texas Co.; Oct. 13, 1938, by Gulf.

*Includes Cherokee, Gregg, Rusk, Smith and Upshur counties.

Posted by Shell Oil Co., Inc. (Oct. 5, 1939)
Polk County, Tex. (Livingston area) $1.10

NORTHEAST TEXAS

(Posted by Humble, Oct. 2, 1939)
Talco $0.65

(Posted by Magnolia, Oct. 12, 1938)
Cass County and Panola County, Tex.:
Magnolia posts below 25° at $0.73, plus 2c differential for each degree, to top grade of 40 & above, at $1.05.

(Posted by The Texas Co., Oct. 12, 1938)
Cass County $1.05

(a) WEST TEXAS and NEW MEXICO

	Humble	Stanolind	Shell	Texas Co. Sinclair (c)
Below 20°	$0.53	....	$0.53	....
20-20.9	.55	....	.55	....
21-21.9	.57	....	.57	....
22-22.9	.59	$0.67	.59	....
23-23.9	.61	for	.61	....
24-24.9	.63	oil	.63	....
25-25.9	.65	Below	.65	$0.65
26-26.9	.67	26°.	.67	.67
27-27.9	.69	.69	.69	.69
28-28.9	.71	.71	.71	.71
29-29.9	.73	.73	.73	.73
30-30.9	.75	.75	.75	.75
31-31.9	.77	.77	.77	.77
32-32.9	.79	.79	.79	.79
33-33.9	.81	.81	.81	.81
34-34.9	.83	.83	.83	.83
35-35.9	.85	.85	.85	.85
36-36.9	.87	.87	.87	.87
37-37.9	.89	.89	for	for
38-38.9	.91	.91	oil	oil
39-39.9	.93	.93	36° &	36° &
40 & above	.95	.95	above.	above.

Posted by Magnolia Petroleum Co.

(Oct. 12, 1938 in West Texas;
Oct. 15, 1939 in Lea County, N. Mex.)

	West Texas	N. Mex.		West Texas	N. Mex.
Below 25	$0.63	$0.63	33-33.9	$0.81	$0.81
25-25.9	.65	.65	34-34.9	.83	.83
26-26.9	.67	.67	35-35.9	.85	.85
27-27.9	.69	.69	36-36.9	.87	.87
28-28.9	.71	.71	37-37.9	.89	for
29-29.9	.73	.73	38-38.9	.91	oil
30-30.9	.75	.75	39-39.9	.93	36 &
31-31.9	.77	.77	40 & over.	.95 above	
32-32.9	.79	.79			

Note: Magnolia's West Texas postings are in Crane, Glasscock, Howard, Mitchell, Upton and Winkler counties.

Pecos County, West Texas
(Posted by Humble Aug. 11, 1939 and Shell, Aug. 29 '39)
Pecos $0.78
Yates Shallow Pool (Shell only) ..... .65

Posted by Sinclair Prairie Oil Marketing Co.
(Aug. 31, 1939)
Eddy county, N. Mex. $0.77
(a) Effective Aug. 11, 1939 by Humble; Shell Oil, Aug. 29, 1939; by The Texas Co., Oct. 12, 1938; Stanolind, Aug. 29, 1939; Sinclair Prairie, Aug. 31, 1939.
(c) Texas Co. posts $0.65 for below 26; Sinclair Prairie, $0.63 for below 25.
Note: Humble's postings are in these counties: Andrews, Crane, Crockett, Ector, Gaines, Glasscock, Howard, Reagan, Upton, Winkler and Yoakum, West Texas; and Lea county, N. Mex.; Shell, in Crane, Ector, Glasscock, Howard, Upton, Winkler, Yoakum, Lea; Stanolind in Hendrick and Henderson field, Winkler county; Texas Co. in Ward, Winkler and Lea

Posted by Continental Oil Co. (Oct. 11, 1938)
Artesia, Jackson and Maljamar pools, New Mexico gravity schedule beginning with below 29, at $0.61; 29-29.9, at $0.63; plus 2c differential for each gravity, up to 40 & above, at $0.85.

COLORADO

Posted by Continental Oil Co. (Oct. 11, 1938)

	Ft. Collins and Wellington		
Below 29	$0.81	35-35.9	$0.95
29-29.9	.83	36-36.9	.97
30-30.9	.85	37-37.9	.99
31-31.9	.87	38-38.9	1.01
32-32.9	.89	39-39.9	1.03
33-33.9	.91	40 & above	1.05
34-34.9	.93		

Canon City and Florence, Col. $0.90

SOUTH AND SOUTHWEST TEXAS

All Shown Below Posted by Humble Oil & Refining Co. (Aug. 11, 1939)
Carroll, Clark, Darst Creek, Hilbig, Salt Flat and Zoborski crudes $0.96
Van crude $0.93
Conroe $1.27
(Oct. 2, 1939)
Flour Bluff and Jim Wells County $1.23
(Sept. 14, 1939)
Hardin, Liberty county $1.10
Oct. 12, '38, Magnolia posted $0.96 in Darst Creek; $0.87 in Luling; $0.99 in Lytton Springs; $1.14 for Cleveland, and $1.02 in Hardin, both in Liberty county, Tex.
Oct. 12, '38, The Texas Co. posted $0.96 in Darst Creek.

(Continued on next page)

CRUDE OIL PRICES

(Continued from preceding page)

***Anahuac-Dickinson** (Oct. 2, 1939)

Below 20°	$0.81	30-30.9	$1.03
20-20.9	.83	31-31.9	1.05
21-21.9	.85	32-32.9	1.07
22-22.9	.87	33-33.9	1.09
23-23.9	.89	34-34.9	1.11
24-24.9	.91	35-35.9	1.13
25-25.9	.93	36-36.9	1.15
26-26.9	.95	37-37.9	1.17
27-27.9	.97	38-38.9	1.19
28-28.9	.99	39-39.9	1.21
29-29.9	1.01	40 & above	1.23

*Anahuac-Dickinson includes Cedar Point, Fairbanks, Gillock, Hull, Pierce Junction and Raccoon Bend (shallow sand) and Turtle Bay.

Raccoon Bend (Deep sand crude) Tomball and Satsuma (Aug. 11, 1939)

22-22.9	$0.95	32-32.9	$1.15
23-23.9	.97	33-33.9	1.17
24-24.9	.99	34-34.9	1.19
25-25.9	1.01	35-35.9	1.21
26-26.9	1.03	36-36.9	1.23
27-27.9	1.05	37-37.9	1.25
28-28.9	1.07	38-38.9	1.27
29-29.9	1.09	39-39.9	1.29
30-30.9	1.11	40 & above	1.31
31-31.9	1.13		

Dec. 3, 1938, Magnolia posted above price and gravity schedule in Tomball. Effective Aug. 29, 1939, Stanolind met Humble in Tomball, except that Stanolind's schedule begins with below 29 at $1.07.

LOUISIANA-ARKANSAS

Posted by Standard Oil Co. of Louisiana

(†) (For effective dates, see footnote)

	*N. La. Ark. Sweet	Bunkie Eola, La.	*South La. Sour	*Ark. Sour	Baton Rouge-University
Below 20°	.....	.....	.....	.....	$0.79
20-20.9	$0.73	$0.83	‡$0.74	$0.63	.82
21-21.9	for	for	.77	for	.85
22-22.9	oil	oil	.80	oil	.88
23-23.9	Below	Below	.83	Below	.91
24-24.9	25°.	25°.	.86	25°.	.94
25-25.9	.75	.85	.89	.65	.97
26-26.9	.77	.87	.92	.67	1.00
27-27.9	.79	.89	.94	.69	1.02
28-28.9	.81	.91	.96	.71	1.04
29-29.9	.83	.93	.98	.73	1.06
30-30.9	.85	.95	1.00	.75	1.08
31-31.9	.87	.97	1.02	.77	1.10
32-32.9	.89	.99	1.04	.79	1.12
33-33.9	.91	1.01	1.06	.81	1.14
34-34.9	.93	1.03	1.08	.83	1.16
35-35.9	.95	1.05	1.10	.85	1.18
36-36.9	.97	1.07	1.12	.87	1.20
37-37.9	.99	1.09	1.14	.89	1.22
38-38.9	1.01	1.11	1.16	.91	1.24
39-39.9	1.03	1.13	1.18	.93	1.26
40 & above	1.05	1.15	1.20	.95	1.28

(Aug. 30, 1939)

Smackover, Ark.	$0.73
Cotton Valley Distillate	$1.20

*N. La.-Ark. Sweet includes Caddo, Cotton Valley, Cross Lake, De Soto, Haynesville, Homer, Rodessa, Sabine and Sligo, La. crudes, and Miller county, Ark. S. La. Sour includes Choctaw, Darrow, N. Crowley, Roanoke and St. Martinsville. S. Ark. Sour includes Buchner, Magnolia and Village pools.

†N. La.-Ark. Sweet crude and S. La. Sour effective Aug. 30, 1939, except Cross Lake, La., Sept. 7, Baton Rouge-Univ., Sept. 11, and Bunkie and Eola, Oct. 23, 1939; and Ark. Sour, Sept. 13, 1939.

‡For Below 21°.

Effective Sept. 8, 1939, Gulf Refg. Co. met S. O. La's. N. La.-Ark. Sweet prices in Bull Bayou, Caddo, Crichton, De Soto, Haynesville, Homer, and El Dorado

Posted by Arkansas Fuel Oil Corp.

Urania, La. (Jan. 28, 1937)	$1.02

Posted by Continental Oil Co.

(Oct. 11, 1938)

Tepetate and Ville Platte, La.	$1.03

(Jan. 1, 1939)

Abbeville, La.

Below 36	$0.92	38-38.9	$0.98
36-36.9	.94	39-39.9	1.00
37-37.9	.96	40 & above	1.02

Posted by Caddo Crude Oil Purchasing Corp.

(Aug. 14, 1939)

Allison area, Shreveport field	$0.95

Lisbon, N. La. (Sept. 14, 1939)

27-27.9	$0.66	32-32.9	$0.76
28-28.9	.68	33-33.9	.78
29-29.9	.70	34-34.9	.80
30-30.9	.72	35 & above	.82
31-31.9	.74		

Lisbon prices met by Gulf, Sept. 14.

Note: S. O. Louisiana prices in all La.-Ark. fields, effective Oct. 5, 1938, are on 100% tank table basis.

GULF COASTAL FIELDS

(a) (For effective dates, see footnote)

	Humble Sinclair Stano-lind	Refugio Crude (Humble, Conti-nental)	Texas Co.	Shell
Below 20	$0.86	$0.91	$0.86	(b)$0.79
20-20.9	.88	.93	.88	.81
21-21.9	.90	.95	.90	.83
22-22.9	.92	.97	.92	.86
23-23.9	.94	.99	.94	.89
24-24.9	.96	1.01	.96	.92
25-25.9	.98	1.03	.98	.95
26-26.9	1.00	1.05	1.00	.98
27-27.9	1.02	1.07	1.02	1.00
28-28.9	1.04	1.09	1.04	1.02
29-29.9	1.06	1.11	1.06	1.04
30-30.9	1.08	1.13	1.08	1.06
31-31.9	1.10	1.15	1.10	1.08
32-32.9	1.12	1.17	1.12	1.10
33-33.9	1.14	1.19	1.14	1.12
34-34.9	1.16	1.21	1.16	1.14

(Continued in next column)

35-35.9	1.18	1.23	for	for
36-36.9	1.20	1.25	oil	oil
37-37.9	1.22	1.27	34° &	34° &
38-38.9	1.24	1.29	above.	above.
39-39.9	1.26	1.31		
40 & above	1.28	1.33		

(a) Effective Oct. 2, 1939 by Continental, Humble and Texas Co.; Oct. 3, 1939 by Sinclair and Stanolind; Aug. 29, 1939 by Shell. Stanolind's lowest grade is below 21, at $0.88. Refugio, effective Oct. 2, '39 by Humble.

(b) Shell posts these prices in Iowa district, Black Bayou and White Castle, La.; prices in Iowa district have 2 lower grades: below 18, at $0.75, 18-18.9, $0.77; and 19-19.9, is $0.79.

Note: Humble's Gulf Coast prices apply in these Texas fields: Amelia, Clear Lake, Goose Creek, Mirando which includes Duval, Jim Hogg, Webb and Zapata counties and Heyser and Placedo fields; Mykawa, Sugarland, Thompsons and Webster.

Humble's prices in Refugio include crudes purchased in Saxet, East White Point, Greta, O'Connor-McFadden, Taft, Plymouth and Tom O'Connor fields.

Stanolind's prices apply in High Island and Spindletop; also in Clinton, Hastings and South Houston, where, effective Jan. 1, 1940, lowest grade is below 21° at $0.88; rest of schedule same as other Gulf Coast. Magnolia posts Mirando, effective Oct. 2, same prices as Humble. Texas Co.'s prices are in Texas and La., Gulf Coast; its prices on Refugio are same as Humble's up to 28 gravity; 28 & above, $1.09; on Duval-Mirando same as Humble's up to 28; 28 & above, $1.04; it posts Golden Meadow, La., 24-30 grav., $0.90, plus 2c differential, to 40 & above, $1.10.

Posted by Shell Oil Co., Inc. (Aug. 29, 1939)

Gibson field, Terreborne Parish, La.	$1.04

ROCKY MOUNTAIN FIELDS

Posted by Stanolind Oil & Gas Co.

(Effective Oct. 11, 1938)

Salt Creek, (except Tensleep crude), Midway and Dutton Creek, Wyo., same schedule as Stanolind posts in Oklahoma-Kansas, ranging from $0.86 to $1.10, which see under Mid-Continent crude on previous page.

Tensleep, Salt Creek field	$0.646
Ites, heavy	0.92
Elk Basin, light	0.90
Grass Creek, light	0.90
Frannie light	0.55
Grass Creek, heavy	0.40
Hamilton Dome, Wyo	0.35
Frannie heavy	0.42

Posted by Ohio Oil Co. (Oct. 11, 1938)

Elk Basin, Wyo.	$0.90	Rock Creek	1.00
Grass Creek, light	0.90	Lance Creek	0.77
Dry Creek, Mont.			0.92
Grass Creek, heavy (May 1, 1938)			$0.50
Sunburst, Mont. (Nov. 16, 1937)			$0.90

Posted by Continental Oil Co.

(Oct. 11, 1938)

Cat Creek, Mont.	$1.10
Big Muddy, Wyo.	0.98
Lance Creek, Wyo.	0.77

CALIFORNIA, *Posted by Standard Oil of California*

All gravities above those quoted take highest price offered in the field. Prices effective Feb. 1, 1940

Gravity	Signal Hill (Long Beach) and others*	Seal Beach	Huntington Beach	Inglewood	Playa Del Rey	Olinda Brea Canon	Athens-Rosecrans	Torrance	Richfield	Whittier East Coyote (La Habra)	Montebello	West Coyote Hills	Santa Fe Springs	Greeley Canal	Colex Leroy Richfield Western	Mountain View and others**	Elk Hills	Buena Vista Hills, Midway-Sunset, Lakeview Area	Lost Hills	Coalinga	Wheeler Ridge	Santa Maria Val. (Union Oil, Sept. 1 '39)
14-14.9	$0.65	$0.64	$0.63	$0.64	$0.65	$0.61	....	$0.65	$0.61	$0.61	$0.62	$0.63	....	....	....	$0.60	$0.60	$0.60	$0.60	$0.60	....	$0.42
15-15.9	.65	.64	.63	.64	.65	.61	....	.65	.61	.61	.62	.63	....	....	....	.60	.60	.60	.60	.60	....	.44
16-16.9	.65	.64	.63	.64	.65	.61	....	.65	.61	.61	.62	.63	....	....	....	.60	.60	.60	.60	.60	....	.45
17-17.9	.65	.64	.63	.68	.65	.61	....	.65	.61	.61	.62	.63	....	....	....	.60	.60	.60	.60	.60	....	.46
18-18.9	.65	.64	.63	.71	.65	.65	....	.68	.61	.61	.62	.63	....	....	....	.60	.60	.60	.60	.60	....	....
19-19.9	.69	.64	.67	.75	.70	.69	....	.72	.61	.65	.62	.63	....	....	....	.60	.64	.64	.64	.61	$0.60	....
20-20.9	.73	.64	.72	.79	.76	.74	....	.75	.65	.69	.62	.67	....	....	....	.60	.69	.69	.69	.62	.60	....
21-21.9	.78	.64	.76	.82	.81	.78	....	.79	.69	.73	.62	.72	$0.63	....	....	.64	.74	.74	.74	.66	.60	....
22-22.9	.82	.69	.81	.86	.86	.82	....	.82	.73	.77	.66	.76	.63	....	....	.68	.79	.79	.78	.70	.63	....
23-23.9	.86	.75	.85	.89	.92	.86	$0.71	.86	.78	.82	.71	.81	.67	....	....	.71	.84	.84	.82	.74	.67	....
24-24.9	.90	.80	.90	.93	.97	.90	.77	.89	.82	.86	.75	.85	.72	....	....	.75	.89	.89	.86	.78	.71	....
25-25.9	.95	.86	.94	.96	1.02	.95	.82	.93	.86	.90	.80	.89	.77	....	....	.79	.94	.94	.90	.82	.75	....
26-26.9	.99	.91	.99	1.00	1.08	.99	.88	.96	.90	.94	.84	.94	.82	....	....	.83	.99	.99	.95	....	....	....
27-27.9	1.03	.97	1.03	1.04	....	1.03	.94	1.00	.94	.98	.89	.98	.87	$0.83	$0.92	.87	1.04	1.04	.99	....	....	....
28-28.9	1.07	1.02	1.07	1.07	....	1.07	.99	1.03	.98	....	.93	1.02	.91	.86	.96	.91	1.09	1.09	1.03	....	....	....
29-29.9	1.10	1.07	1.11	1.10	....	1.10	1.04	1.06	1.02	....	.98	1.06	.96	.90	.99	.95	1.14	1.14	1.07	....	....	....
30-30.9	1.14	1.12	1.15	1.14	....	1.14	1.09	1.09	....	....	1.02	1.10	1.01	.94	1.02	.99	1.19	1.19	1.11	....	....	....
31-31.9	....	....	....	1.17		1.17	1.14	Elwood Terrace			1.07	1.14	1.05	.98	1.06	1.02	1.24	1.24	....	....	....	....
32-32.9	....	....	....	1.20		1.20	1.19	F. o. b. ship.			1.11	1.18	1.09	1.02	1.09	1.06	1.29	1.29	Kettleman Hills			....
33-33.9	....	....	....	....		....	1.24	....	$1.21	....	1.15	1.22	1.14	1.06	1.13	1.10	1.34	1.34	....	$1.12	....	....
34-34.9	....	....	....	....		....	1.29	....	1.25	....	1.20	1.26	1.19	1.10	1.16	1.14	....	....	....	1.17	....	....
35-35.9	....	....	....	....		....	1.34	....	1.29	....	1.24	....	1.23	1.14	1.20	....	....	....	....	1.21	....	....
36-36.9	....	....	....	....		....	1.39	....	1.33	....	1.28	....	1.27	1.18	1.23	....	....	....	....	1.25	....	....
37-37.9	....	....	....	....		....	1.44	....	1.37	....	1.33	....	1.31	1.22	1.26	....	....	....	....	1.29	....	....
38-38.9	....	....	....	....		....	1.49	....	....	....	1.37	....	1.36	1.25	1.30	....	....	....	....	1.33	....	....
39-39.9	....	....	....	....		....	1.54	....	....	....	1.42	....	....	1.29	1.34	....	....	....	....	1.38	....	....
40-40.9	....	....	....	....		....	1.59	....	....	....	1.46	....	....	1.33	1.37	....	....	....	....	....	....	....
41-41.9	....	....	....	....		....	....	....	....	....	1.50	....	....	1.37	1.40	....	....	....	....	....	....	....
42-42.9	....	....	....	....		....	....	....	....	....	1.54	....	....	1.41	1.44	....	....	....	....	....	....	....
43-43.9	....	....	....	....		....	....	....	....	....	1.59	....	....	1.45	1.47	....	....	....	....	....	....	....
44-44.9	....	....	....	....		....	....	....	....	....	1.63	....	....	1.49	1.51	....	....	....	....	....	....	....
45-45.9	....	....	....	....		....	....	....	....	....	1.67	....	....	1.53	1.54	....	....	....	....	....	....	....
46-46.9	....	....	....	....		....	....	....	....	....	1.71	....	....	1.57	1.57	....	....	....	....	....	....	....
47-47.9	....	....	....	....		....	....	....	....	....	....	....	....	1.61	....	....	....	....	....	....	....	....
48-48.9	....	....	....	....		....	....	....	....	....	....	....	....	1.64	....	....	....	....	....	....	....	....

FOB Standard Pipeline

*El Segundo prices same as Signal Hill. Wilmington prices same as Signal Hill, except below 19 gravity prices are: 14-16.9, $0.60; 17-17.9, $0.62; 18-18.9, $0.64.

**Includes Newhall, McKittrick, Kern River, Round Mountain and Kern Front, schedule for which ends with 19-19.9. Mountain View schedule begins with 19-19.9.

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· PERSONALS ·

A. T. Scherer is back on the job over at Sinclair Prairie Oil Co.'s Tulsa office. After a three-year absence, he returned last week to his former association with the natural gasoline and liquefied petroleum gas sales department of the Sinclair company.

"Fons" Scherer, as he is called, started to work for the old Sinclair Oil & Gas Co. as an accountant and when the gasoline department was organized he was given the job of handling gas contracts. Eventually he entered the sales end of the then infant natural gasoline industry. He is widely known in this phase of the oil business.

Mr. Scherer is credited with authoring the idea of transporting natural gasoline to refinery in the crude stream to effect savings in transportation costs of the natural.

D. L. Harlow will be associated with Mr. Scherer in the natural gasoline and sales department in the same position he has held the past several months.

* * *

W. K. Warren, Tulsa, president, Warren Petroleum Co., has been appointed chairman of the planning committee of the Tulsa Community Fund. Mr. Warren and his committee will work with **Mark S. Patton,** president of Hurley Gasoline Sales Co. and the "fund," in laying the ground work for the drive.

Ralph O. Dietler, vice president of Stanolind Oil Purchasing Co. and **Rush Greenslade,** vice president of Gulf Oil Corp. are members of the "strategy." committee.

* * *

With an indelible picture of the hospital ceiling impressed upon his mind's eye, **E. H. Webb,** Wichita, field man for Kansas Oil Men's Assn., is counting the days now until he will be released from St. Catherine's Hospital at Garden City, Kans. He entered the hospital Aug. 31 as the result of a serious automobile accident near Garden City and doctor now tells him "a week or 10 days more and we'll let you go."

Impact of the wreck broke most of Mr. Webb's ribs and that cast he's been in makes the "outgoing" from the hospital a welcomed and memorable occasion. Mr. Webb works out of K.O.M. A.'s Wichita headquarters.

Brown L. Meece, Chicago, assistant sales manager of Globe Oil & Refining Co. will probably go around walking under ladders and breaking mirrors, after Friday the 13th of September brought him a husky male addition to his family. The youngster, weighing in at 9 lbs. 10 ounces, is the second boy. The Meece's also have one daughter.

* * *

Tired of retirement, **David C. Reid,** New York, has joined the new Weaver Shipping and Oil Corp. in New York City, voluntarily breaking the eight-year business silence since he withdrew in 1932 from the company bearing his name. Mr. Reid, one of America's first tank steamer brokers, will celebrate his 80th birthday before very long.

Born in Aberdeen, Scotland, he attracted early attention as the president of Harlan and Hollingsworth Shipbuilding Co., Wilmington, Del., the oldest company of its kind in the country. He organized his own brokerage firm in 1914 and continued with it until his retirement.

His new company will specialize in the buying, selling and chartering of tank steamers and in this he will be assisted by **E. W. Lounsbury,** former manager of the chartering department of David C. Reid, prior to 1921.

David C. Reid

At least one of the campaign ideas of Brother **O. C. Cash,** Tulsa, founder and third ranking official of the Society for the Preservation and Encouragement of Barber Shop Quartet Singing in America, Inc., has jelled. There was mass singing of the old barber shop songs at Tulsa's huge reception honoring Republican Presidential Nominee Wendell L. Willkie Sept. 16.

* * *

Thomas H. Risk, Detroit, formerly with Pure Oil Co. has joined Ethyl Gasoline Corp. in the refinery technology division, announces **William H. Hubner,** division head. Mr. Risk will assist in co-ordinating automotive research activities at Ethyl's Detroit and San Bernardino (Calif.) engineering laboratories. He will also extend the technical service offered by Ethyl to its refinery licensees. Prior to being connected with Pure, Mr. Risk was with Socony-Vacuum Oil Co. in the Paulsboro laboratories.

* * *

Just one of those "old Southern customs": When **Charles Carroll,** Cleveland, Tenn., manager of a Red Ace Petroleum Co. station, found that one of his gasoline pumps was broken, he didn't write a letter to any equipment manufacturer. But he did contact such a firm—by radio. Being an amateur radio fan, he went on the air and asked **Harry Carroll,** Nashville, to make necessary arrangements with a pump manufacturer.

However, **Maurice Jackson,** another radio fan and son of an equipment manufacturer employe, intercepted the message, rushed it to the company and Mr. Carroll's order was "promptly filled."

* * *

G. B. Dickey, Nashville, Tenn., recently served on the Nashville Alien Registration Board and is active in city affairs. Mr. Dickey is president of the Tennessee Oil Mens Assn. and president and general manager of the American Oil Co. of Tennessee.

* * *

James M. Reidy of Warren Petroleum Co.'s Tulsa sales department is honeymooning "somewhere" down in Texas and Louisiana. He married Margaret Flannagan Sept. 7.